IMPERIAL MYCOLOGICAL INSTITUTE
30 OCT 1936

ADVISORY

DEPARTMENT OF THE IMPERIAL COLLEGE

OF TROPICAL AGRICULTURE.

IMPERIAL MYCOLOGICAL INSTITUTE
30 OCT 1936

REPORT

ON THE

DEPARTMENT OF AGRICULTURE

ST. LUCIA,

1935.

ISSUED BY THE COMMISSIONER OF AGRICULTURE

[Price Sixpence.]

ST. LUCIA.
PRINTED BY THE GOVERNMENT PRINTER AT THE GOVERNMENT PRINTING OFFICE,
1936.

FORWARDING DISEASED SPECIMENS FOR EXAMINATION.

PLANTS.

A few fragments of a diseased plant are of practically no value for scientific investigation. Sufficient materials should always be sent so that the primary cause of the trouble may be located.

Full particulars should be given as to the nature and extent of the damage *done*, the part of the plant attacked, the nature of the soil, drainage, the prevalence of the disease, when it was first noticed, and whether any similar kind of disease has previously been observed in the neighbourhood.

Specimens of portions of plants attacked by fungi may be sent green, packed in a well-ventilated box if the time taken for delivery is under 24 hours, but if delivery takes a longer time, all leaves or soft fruits should be placed in a bottle or corked tube containing a solution made of one part rum or methylated spirit and two parts water. As many stages of the disease as possible should be sent, with notes as to the nature of each stage.

All specimens should be accompanied by detailed particulars of the nature of the disease and shall be addressed to :—

THE DEPARTMENT OF AGRICULTURE,
CASTRIES.

INSECTS.

Observations and specimens of economic importance or otherwise will always be gladly received. The following directions should be observed in this respect :—

Living insects should be packed with a supply of the plant on which they are found feeding and the box should have some small holes pierced for the purposes of ventilation. These should be carefully packed in such a way as to prevent their becoming crushed in transit.

If it is desired to preserve specimens they should be put up in bottles with tightly fitting corks. Methylated spirits, diluted rum, etc., make excellent preserving fluids.

Scale insects, etc., should be forwarded on the portion of the plant on which they are found.

If in doubt as to the best method of forwarding specimens, a letter should be sent asking for instructions and stating full details.

In all cases full particulars should be forwarded as to the nature and extent of damage done, along with any other important points that may have been noticed.

All specimens should be addressed to :—

THE DEPARTMENT OF AGRICULTURE,
CASTRIES.

ADVISORY
DEPARTMENT OF THE IMPERIAL
COLLEGE OF TROPICAL AGRICULTURE.

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1936.

LETTER OF TRANSMITTAL.

TRINIDAD,
22nd June, 1936.

Sir,

I have the honour to submit herewith the Annual Report of the Agricultural Department, St. Lucia, for the year ending December 31st, 1935.

2. The year was free from extremes in the condition of the weather, and agriculture in general consequently suffered no ill effects from adverse weather conditions. Rainfall was favourably distributed throughout the year, the total being approximately 10 per cent. less than the annual average for the last half century.

3. The total export value of the products of agriculture and related industries amounted to £103,232, an increase of approximately ten per cent. over that of the previous year.

4. The sugar industry continued to be the most important industry of the Colony. In spite of the fact that the average export price of sugar was seven shillings per ton less than in 1934, the value of the export products of the industry during the year, amounted to £50,778, being approximately £10,000 more than in 1934, and more than twice the value of the export products of any other single industry. The actual area in production of sugar-cane was only slightly greater than in the previous year. The increase in production has been due to all-round improvements in the industry, including greater efficiency both in the factory and the field. In the latter, special attention may be drawn to the improved cultural methods now in practice, to the use of better sugar-cane varieties and to the more effective pest control. The progress achieved reflects great credit on those engaged in the industry and on the agricultural and technical officers who have rendered valuable assistance.

5. I regard the future of the sugar industry as a matter of vital importance to the Colony. Production is likely to continue increasing as scientific methods are more extensively applied, and it is not unlikely that within a few years a maximum production of about 12,000 tons of sugar will be attained. A production of this figure, representing an increase of 50 per cent. on the present crop, will be of great advantage to the Island, and it would be unfortunate if in any scheme for limitation of production the quota for St. Lucia is fixed at a lower figure than 12,000 tons.

6. The lime industry was the next most important industry during the year. The total export value of lime products amounted to £21,124 in 1935, being only slightly less than the corresponding figure for 1934. Within the industry efforts have been made for the better organization of production and marketing. A Lime Oil Sales Company was formed for the purpose of regulating the export and marketing of lime oils in conjunction with a similar organization in Trinidad, and, as a result of discussion at the meeting of the Fruit and Vegetable Council (Eastern Group) held in St. Lucia in 1935, a voluntary agreement was made between the exporters of green limes in St. Lucia and those in Dominica and Trinidad for fixing the minimum export price of green limes exported to the United States. These efforts are likely to have a beneficial effect on the future of the industry.

7. During the year increased damage to the lime (and other Citrus species) caused by the root-eating larvae of Citrus weevils led to closer investigation of measures for the control of the pests. Much useful preliminary work in this connection was conducted by Mr. H. E. Box, Entomologist, in the relatively short time at his disposal, and by the Agricultural Department. The problem of the control of these pests has now been undertaken by the Entomological Department of the Imperial College of Tropical Agriculture, and a series of experiments have been laid down to determine, if possible, a suitable and economical method of controlling these pests.

8. There is little change to be reported in the position of the coconut industry. There was a continued demand for nuts in Canada and the United States, but the exports of copra were the lowest for eight years owing to depressed market conditions. There was a marked improvement in market conditions towards the end of the year.

9. The low prices of the cocoa market in recent years have been responsible for a gradual loss of interest in this crop and consequently export quantities have diminished. In many instances cacao is being replaced by alternative crops. Certain planters, however, are retaining a limited area and are taking steps to establish improved varieties.

10. The young banana industry has grown satisfactorily during the year, and mainly as the result of the strict attention paid by the Agricultural Department to the issue of disease-free planting material and to the activities of the Department's inspection service, the percentage infestation of Panama disease was less than one per cent. or almost negligible. The acreage established by the end of the year was approximately 800 acres, almost double the acreage at the end of 1934.

a misprint for 1,800, the 1935
report stating clearly there were
1,803 acres under bananas

11. The fresh fruit industry, including such fruit as grapefruit, oranges, mangoes, avocado pears and other miscellaneous fruits, has reached a position of considerable importance among the export industries of the Colony. Although the expansion of these minor fruit industries has been somewhat slow, there is now every prospect of export quantities increasing during the next few years.

12. The services of Captain H. V. Metivier, Government Veterinary Surgeon, were again kindly loaned by the Government of Trinidad for a short visit to St. Lucia, when livestock conditions were further examined and additional recommendations for their amelioration put forward.

13. A detailed account of the work conducted at Union Experiment Station and in the nurseries of the Agricultural Department is recorded as usual in the report. It is unfortunate that plots in the manurial experiment on limes have already been to some extent damaged by infestation of Citrus weevils.

14. The section in the report dealing with agricultural education indicates that there is much room for improvement in the system of agricultural training. The future of the Colony is so largely dependent upon agricultural pursuits that the early establishment of a definite policy of agricultural education, and the provision of suitable facilities for training, would appear to be desirable.

15. An account of the preliminary work undertaken in connection with the establishment of the proposed Murray Road Land Settlement scheme is recorded. It is to be hoped that rapid progress in the development of the Settlement will be made in the near future.

16. The question of deforestation has received greater attention during the year, and early in the present year a visit was made to the Colony by Mr. A. Wimbush, Chief Conservator of Forests, Madras, to examine and report upon local forest conditions.

17. Further improvements have been affected in the Botanic Gardens in Castries, rendering them more attractive and useful to the Public.

18. The Agricultural Department has again made a valuable contribution towards the improvement of the Agricultural industries of the Colony and its officers are to be congratulated on the useful work they have accomplished during the year, a comprehensive and interesting account of which is presented in this report.

I have, &c.,

C. C. SKEETE,
Acting Commissioner of Agriculture.

His Honour,
The Acting Administrator.
St. Lucia, B. W. I.

STAFF OF THE DEPARTMENT OF AGRICULTURE, ST. LUCIA.

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C. E. CHARLES	Acting Clerk to Agricultural Superintendent.
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Government Marketing Depot.

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J. F. GIRARD	Clerk & Chief Packer, Government Marketing Depot.
E. V. LEWIS [6]	Copyist.
A. F. ROMEO [7]	Copyist.

(1) To 1st May, 1935. (2) From 1st May, 1935. (3) Absent. Acting Revenue Officer and Keeper Spirit Warehouse, and 2nd Clerk Government Office, from 31st January, 1935 (4) To 8th October, 1935. (5) From 8th October, 1935. (6) To 8th October, 1935. (7) From 16th December, 1935.

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SAINT LUCIA.

Report of the Department of Agriculture for the Year ended December 31, 1935.*

SECTION I. AGRICULTURE IN THE COLONY.

1. Weather Conditions and Agriculture.

Generally fine and dry weather was experienced during the year, with freedom from severe storms, the total rainfall being considerably lower than the average, but still an improvement on conditions in the previous dry year 1934, the effects of which still shewed in the canefields in the southern extremity of the Colony.

The hurricanes of August and October in the Western Caribbean and Continental areas had no serious local effects other than temporary flooding in lowlying areas during August and October. Heavy rains during these months affected road transport conditions and caused delay in transporting the banana crop. Emergency work on roads was accordingly undertaken and conditions had much improved by the end of the year. Planting operations were more or less continuous throughout the year with some slackening during January to March in the ground provision crops when dry weather supervened.

The Meteorological statistics appended to this report give fuller details of weather conditions, and a rainfall contour map of the Colony which has been prepared and published separately, provides a useful record of average rainfall conditions from 1907 to 1935.

2. General Conditions and Progress in the Chief Industries.

I. THE SUGAR INDUSTRY.

The year 1935 was again a year of disappointment to the Sugar Producers in view of the continued low prices realised for sugar exported from the Colony, the average export price showing a reduction of 7/- per ton as against that of the previous year. The continued relief of the Sugar Preference and the benefits derived from the increased production and extraction have to some extent permitted the industry to regain an improved financial position. There was an all-round improvement in the factory sugar extraction ratio which reached the more satisfactory level of one ton of sugar per 8.4 tons of cane in the best factory (1st and 2nd sugars) and one ton of sugar per 10.7 tons of cane in the lowest extraction, the average for the four factories being 9.5 tons. The managements generally were preparing for a further outlay on improved machinery in order to modernise the factories and so attain a maximum output without significant extensions in area. The area under cane for the year was approximately 4,600 acres as against 4,500 acres in 1934, due mainly to the re-establishment of the Dennery canefields.

Suitable cash advances were provided by the managements for the metayers canes, and small holders were eager to take advantage of the factory prices which were from 8/- to 10/- per ton of cane according to districts. The production of fancy molasses was to some extent revived.

The introduction of the Amazon Fly, *Metagonistylum*, provided for in part by a Colonial Development Fund grant and a joint contribution from the

Note * The arrangement of the Departmental Report has been revised to conform with the instructions issued under Circular Despatch from the Secretary of State dated 8th November, 1935, on the recommendations of the Colonial Advisory Council of Agriculture and Animal Health, and referred to by the Commissioner of Agriculture in Circular C.A. 53/36. 24.1.36.

factory managements, has resulted in a higher degree of control of the Moth-borer pest in certain areas, with a corresponding improvement in tonnage and sugar extraction.

The application of scientific principles of manuring, draining, and general advances in field work, have further resulted in an increased production per acre on shorter period ratoons.

The total crop production for the year reached the record figure of 7,285.9 tons of which 6,080 tons were exported.

There was a corresponding high increase in production of molasses and syrup, this being 256,900 gallons in 1935 as against 194,000 in 1934. There was again much difficulty in disposing of the Factory molasses, a proportion only being used for the manufacture of rum for local use. There was no export trade in rum.

The weather was very favourable and no serious losses from floods occurred during the year. The prospects for the 1936 crop are very promising.

The sugar market was low generally and quotations ranged from 8/0½ per cwt. raw Preferential 96° c.i.f. in February to 8/10¼ in December.

The following figures give the exported quantity and value of sugar products comparatively during the period 1931 to 1935 and show a satisfactory increase of some £10,000 as against previous years :—

	Sugar.			Molasses.	Molasses & Syrup.		Rum.	Exported Total Value Sugar Products. £
	Produced tons.	Exported tons.	Value £	Produced gallons.	Exported gallons.	Value £	Produced gallons.	
1931	4,572	3,973	35,554	162,000	24,837	1,194	31,003	36,748
1932	5,452	4,990	46,466	...	32,988	1,453	30,415	47,919
1933	5,474	4,940	46,493	207,000	43,260	1,417	28,540	47,910
1934	5,498	4,730	39,396	194,000	23,080	1,431	25,239	40,827
1935	7,286	6,080	48,377	256,900	168,903	2,401	31,408	50,778

Difficulties in the Industry.

As referred to under general weather remarks above, the canefields of the Vieux-Fort area have suffered serious losses of canes from drought for two seasons, and inadequate capital appears forthcoming to re-establish the minimum economic area, and to equip the fields with the necessary irrigation plant which would remove the drought hazard.

Consequently a very cautious attitude has had to be adopted, the rates and allowances of pay have decreased, and the labour employed has been reduced to the lowest working figure, with resultant distress to the district. Yet there is a large area of land attached to the Factory, which, if brought under cultivation, would absorb the unemployed surplus at present habitually workless and reduced to a bare subsistence, or forced to migrate elsewhere. If the cane area continues to be restricted, the question of alternative crops such as cotton and provisions will have to be considered, and it has been suggested that this offers possibilities by way of renting of land at nominal rates to peasants for selected crops, and for household provisions, meat and milk supplies. It is felt that the problem requires an early solution in order to ameliorate the present labour unrest which is evident in this district.

Employment problems in the northern cane areas are not so pressing, and two factories in particular are becoming well equipped and are able to consider

the welfare of their employees to a greater extent. Proposals to establish modern labourers' barracks, sanitation, and a provision stores for labourers' requirements are under way, the latter convenience being already operating to the marked satisfaction of the Factory employees.

II. THE LIME INDUSTRY.

This industry is now the second in importance in the Colony, having grown from a single factory installed and operated by Government in 1914 as a means of promoting the industry, to some sixteen or more factories operated by private ownership throughout the Colony, and dealing with products to the value of £21,124, as barrels of limes, 1935=38,189; in 1914= £6,360, as barrels 12,765. The Government operated factory was dismantled and sold after 1926, having served its purpose. The industry is now a very popular one and provides a ready crop for small and large proprietors, tending to establish the former in his own holding. Its products have gained a sound reputation in the export markets and there is every appearance that the industry will further extend provided a fair and steady market price is assured. The principal product, Distilled Lime Oil, has been the subject of co-operative effort between the producing islands, and the Green Lime trade also has become more organised as a result of mutual official and private efforts, viz. the West Indian Fruit and Vegetable Conference (Eastern Group), whereby certain producing islands engage not to ship Green limes below a working price per barrel f.o.b. This price is regulated by interchanged cabled advices through the co-operating islands and varies according to season and market conditions. The minimum f.o.b. rate agreed on by shippers was stable at $6.50 per barrel in June, prices having been higher during the January—March period when few green limes were available.

Whilst the industry has had serious setbacks, from time to time, both in crop conditions locally, and abroad in unsteady market prices, it has now entered upon a phase of closer union and mutual effort, which should enable it to organise against probable over-production, and to extend its consumers market by judicious advertising. The production of selected trees budded on proved root-stocks lies entirely in the hands of the Department locally, thus some check can be exerted on inflated planting proposals, which would injure the industry as a whole. For this reason the use of lime seedling plants grown casually for cheap establishment has been discouraged, and concentration on the problems of root-stock treatment, diseases and pests, has been urged in the established cultivations.

The total exported lime crop of the Colony estimated in barrels amounted to 38,189 barrels valued at £21,124 as compared with 45,000 barrels valued at £21,852 in 1934. This decrease is due to the reduced crop of the season through unfavourable spells of wet weather, the destructive effects of "Red-root" disease, and "die-back" brought about by the root-feeding larvæ of the Citrus Weevil *Diaprepes*. Special measures, (referred to in the sections describing the work of the Department in this report) were needed to combat this threatened decline of the industry, and limes budded on sour-orange stocks have been largely used in replacing the root-disease areas. The weevil pest was made the subject of investigation jointly by the Entomologist and the Department, with a view to introducing biological control in the near future.

The export of concentrated juice declined owing to low prices for this product and amounted to 1,080 gallons, as compared with 3,371 gallons for the year 1934. The market demand has remained unattractive. A larger volume of trade was done in Raw Lime Juice, 29,613 gallons valued at £854 being exported as compared with 10,525 gallons exported in 1934.

The Lime-Oils Sales organisation was formed during the year to regulate

the export and marketing of Lime Oils in conjunction with Trinidad. This has had a very beneficial effect on the market and the price of Distilled Lime Oil has remained stable at 22/6 per lb. c.i.f. The position of St. Lucia in this market is shown in the following table for 1934 reproduced (with acknowledgements) from the *West India Committee Circular*.

Exports of Lime Oils from the Eastern and Western Groups.

	Distilled.		Handpressed.	
	lb.	£	lb.	£
Trinidad & Tobago ...	24,255	24,253	442	802
St. Lucia	13,406	12,275	1,251	1,868
British Guiana ...	7,582	6,868	...	...
Dominica	6,288	6,418	245	393
Grenada	6,171	6,862	...	..
Montserrat	...	2,137	..	
Jamaica	969	841	...	...
Antigua	...	...	...	395

Distilled Lime Oil was again the principal feature of the industry although the quantity shipped was considerably lower than that for the previous year—10,264 lb. valued at £9,673 as compared with 13,406½ lb. valued at £12,275 in 1934. There was a moderate carry-over of stocks under the controlled marketing scheme at the end of the year.

Handpressed Oil was in demand, 1,504 lb. valued at £2,517 being exported as against 1,251½ lb. valued at £1,868 in 1934. Quotations ranged from 32/6 to 40/- per lb. c.i.f.

The Green Lime trade was steady throughout the year, 6,619 barrels of limes valued at £8,035 being exported as compared with 6,001 barrels valued at £7,010 in the previous year.

The exported crops for the last ten years estimated as barrels of limes, and the exports and values of lime products for the five year period 1931—1935, are given below :—

Year.	Quantity Barrels.
1926	59,415
1927	58,948
1928	56,186
1929	34,483
1930	42,844
1931	50,339
1932	44,762
1933	44,019
1934	45,000
1935	38,189

	Concentrated Lime Juice.		Raw Lime Juice.		Distilled Lime Oil.		H. P. Lime Oil.		Green Limes		Total Value £
	Quantity gals.	Value £	Quantity gals.	Value £	Quantity lb.	Value £	Quantity lb.	Value £	Quantity brls.	Value £	
1931	10,312	650	6,961	297	10,310	14,524	3,059	5,236	4,114	5,418	26,125
1932	7,280	78	4,069	152	10,345	11,662	1,989	3,337	3,782	5,552	20,781
1933	16,208	860	591	40	8,056	7,412	2,582	3,021	3,758	4,445	15,778
1934	3,371	228	10,525	471	13,406	12,275	1,251	1,868	6,001	7,010	21,852
1935	1,080	45	29,613	854	10,264	9,673	1,504	2,517	6,619	8,035	21,124

III. THE COCONUT INDUSTRY.

This industry is the third staple industry in the Colony according to the value of the products exported, and covers an area estimated at some 4,800 acres when calculated at the average planted distance of 30′ by 30′ for coconuts established as a pure crop. The type of cultivation practised does not account for any large employment of labour, and a periodical cutlassing and weekly collection of nuts, comprises the principal items of work on the established plantations. These in particular are most satisfactory at sea-level on marine alluvial formations and on the lower slopes of valleys opening to the sea. Plantings at higher elevations and on exposed hill faces are liable to produce smaller crops mostly of "cull" size, being subject to temporary drought during severe dry seasons. The estimated annual crop may therefore range from 100 nuts per tree in the best areas to a more general average of 30—50 export nuts per tree.

The crop season of 1935 was particularly active during the months of October to December as shewn by the monthly export trade :—

	No.
January	166,932
February	234,768
March	251,608
April	239,178
May	150,567
June	277,780
July	167,849
August	255,150
September	197,588
October	278,814
November	261,809
December	332,922

Attention to more accurate grading of 4″—4½″ sizes principally for Canada, 5″ diameters and over, for the New York Market, and to the cull sizes for the United Kingdom has given occasion for very satisfactory reports in the markets, the Canadian Trade report commenting on the anticipated upward trend of exports, because of "the intrinsic value of the nuts which are favoured by the trade for their high percentage of meat content". One complaint only was received and dealt with during the year and this referred to a mixed assortment of bagged nuts which was being prepared as sized nuts for export. This was promptly investigated and the use of sizing boards was demonstrated to ensure proper grading.

The total crop of nuts exported was 2,814,965 valued at £7,632, as against 2,616,175 nuts valued £7,298 in 1934. Very satisfactory progress has been made in the export of selected nuts to Canada and the United States as shown below according to export destinations :—

Destination.	No.	Value. £
Canada	1,615,105 ...	4,600
U.S. America	619,610 ...	1,776
United Kingdom	378,592 ...	769
Barbados	159,844 ...	343
Bermuda	41,322 ...	142
Antigua	300 ...	1
Montserrat	192 ...	1
Total Export	2,814,965 ...	£7,632

Dwarf Coconuts.

Originally imported departmentally via the Royal Botanic Gardens, Kew, from the Federated Malay States, the three dwarf varieties of coconuts,—red, green, and yellow, are now being regularly accepted by the trade, and fall mainly under the export category of 4″—4½″ diameter, or as "cull" grades.

These varieties have acclimatised satisfactorily and are distinguished by reason of nut colour and the sugary flavour of milk and meat, the latter being moderately thick in texture.

Copra.

This trade continued to feel the effects of the depression in the copra market in 1935, and the production of copra was considerably lower than that of the previous year—215 tons valued at £1,871, as against 302 tons valued at £2,592. There was a marked improvement, however, in the market towards the end of the year when prices recovered from £11 5 10 to £14 12 6 in a few months. The market generally at this time shewed a firmer tendency and satisfactory prices induced a greater production of copra, as against export nuts when taken at a net return of $\frac{3}{4}d.$ per nut on estates.

Conditions in the Plantations.

The general health of the plantations has continued to be remarkably good despite the extremes of wet and dry weather experienced during the past three seasons, 1933—1935. Several cases of budrot were reported and treated during the dry season, but no marked extension of pest or disease was observed.

Interplanting of widely-spaced trees has been practised to a small extent and under favourable conditions. Green-manuring with *Gliricidia*, *Crotalaria* or *Indigofera* as a cover crop and weed preventative has been extended, and the burning of coconut husks and refuse for producing ash as a fertiliser has much improved the appearance of certain plantations. On light soils i.e. Vieux-Fort, this waste vegetable matter is better used as a source of natural humus by being spread broadcast in the plantations.

The following figures show the quantity and value of exported coconut products during the past ten years; a considerable trade in dry nuts and green water-nuts is also carried on at ship-board and for local consumption :—

	Coconuts No.	Value £.	Copra tons.	Value £.	Total Value £
1926	118,501	380	80	1,808	2,188
1927	96,813	351	200	4,409	4,760
1928	141,667	444	315	8,690	9,134
1929	295,983	1,032	359	9,878	10,910
1930	268,078	862	400	7,428	8,290
1931	367,350	1,178	498	5,869	7,047
1932	650,240	2,430	432	5,389	7,819
1933	1,199,808	3,527	542	5,167	8,694
1934	2,616,175	7,298	302	2,592	9,890
1935	2,814,965	7,632	215	1,871	9,503

IV. THE CACAO INDUSTRY.

There is nothing of marked interest to report in regard to the Cacao industry, and a further decrease in export values and quantity for the year 1935 provides evidence of the decline of this industry. Some reduction in area, (now taken at some 4,000 acres) has been observed, and other fields have been interplanted with coconuts or various citrus crops. Tonka beans as an alternative crop have been interesting certain planters and a selection of seedlings has been raised departmentally and also by some estates, for occupying cacao areas where these are unprofitable. The selection of cacao seedlings raised from seed provided by the Cacao Research Officers in 1934 have nevertheless continued to receive the attention of certain planters, and orders for increased production on budded stocks have been sent in to the Department. This subject is further commented on under the section "Work of the Department".

The total export of cacao beans amounted to 5,605 cwt. (1934—6,349 cwt.) valued at £6,042 (1934—£6,032), the greatest proportion of shipments being consigned to Canada, as shewn in the destinations of produce tabulated below :—

	Cwt.	£
Canada	2,698	2,856
United Kingdom	2,389	2,801
Barbados	316	214
Trinidad	167	138
British Guiana	35	33

Interest has been shewn in the Canadian trade, but from actual contact with Cacao brokers visiting the Colony on this market, it does not appear that improved grades are likely to command a better price.

Appreciation is shewn in regard to the efforts of the Canadian Trade Commissioner at endeavouring to obtain a reasonable concession under the Cacao Tariff terms of the Canadian-United States Agreement, whereby foreign cacaos imported through New York are subject to a duty of 1½c. per lb., as compared with 2c. formerly. The cheaper rates of foreign cacao, *ex* New York, thus have an advantage over local cacao imported direct into Canada, and in addition there occurs some loss of freight from the subsidised Canadian Steamship service. Market quotations ranged from 30/4 to 34/4 per cwt. c.i.f. London, and at the close of the year were fairly steady at 35/- per cwt. c.i.f. locally.

The following table shews the export production and value of Cacao for the past five years, and demonstrates that this industry is no longer of primary importance, being far below that of the Fruit trade in value of products exported :—

	Cwt.	Value £
1931 ...	10,419	14,125
1932 ...	8,188	9,091
1933 ...	6,056	6,778
1934 ...	6,349	6,032
1935 ...	5,605	6,042

2. (b) Minor Agricultural Industries.

I. THE BANANA TRADE.

Although still regarded as a minor industry according to value of products exported, the cultivation of Bananas has increased by some 200 per cent. on actual estimates of area, being now carried on over some 830 acres as compared with 400 acres in 1934.

This crop has therefore every prospect of becoming a principal industry in 1936, having regard to the quantity of fruit now being carried for shipment in the new year. For the season now ended, the total export crop estimated originally at 50,000 bunches, and re-estimated in mid-season last year as likely to reach 73,000 bunches, actually achieved a production of 60,439 bunches, valued at £5,209, of which 59,893 bunches (=42,113* count bunches) valued at 58 cents were shipped under the Canada Banana Company's contract, the remainder consisting of rejected and miscellaneous bananas exported by hucksters. The estimate of production for 1936 is placed at some 100,000 bunches up to 120,000 bunches, provided no serious loss of crop is incurred through road transport difficulties.

In the past year, owing to severe bruising and damage from overturned trucks, a quantity of fruit was lost to the trade, and a special emergency measure to improve road conditions was advised by the Board of Agriculture, and put into effect by Government.

Conditions in the Industry

The cultivation of bananas is very largely in the hands of peasant proprietors with several outstanding instances of larger proprietors who have purchased forest land from Government, for banana, citrus, and coconut

* Canada Banana Co. report.

production. Consequently a great deal of educational "spade-work" has been necessary by the Officers of the Department travelling staff, who have been required to select and lay out areas, organise plant supplies, establish a plant disease control service, and on the formation of the crop, to regulate the pruning, cutting and shipping of the fruit, and finally to assist in training fruit selectors for the work of the Association. A brief comment on the official side of this work is included under the "Plant Nurseries" section in this report.

The adoption of the "proved section" method of planting which entails the growing of bull-heads under quarantine conditions in the Department nurseries for one year, before sub-dividing these into 4—5 pieces, has been generally accepted by the planters, who now realise that suitable sections can provide better initial returns by way of count bunches, and also freedom from disease to a large extent. These planting sections are provided from the Government Nurseries at ½*d*. per section, not including transport.

Although exceptionally heavy bunches are fairly numerous, these are counted only as 9-hands, thus the average counts of bunches, as at 9-hands, have been low in St. Lucia, owing to a fairly large proportion of unpruned suckers, and banana production in peasant provision gardens. An intensified effort to establish "pure" stands of bananas, where the required standard of cultivation can be put into effect, is now being made among the peasantry, and printed information and demonstrations have been used to good purpose.

The estimated fruit return per acre approaches 200 bunches when grown in cleared forest land under average conditions, at a cost of £7 to £8 per acre, not including charges for land.*

The following schedule shews comparatively the exported quantity of bananas from the co-operating Colonies during the year according to statistics provided by the Canada Banana Company :—

—	9's	8's	7's	6's	Counts	Counts Per cent.
Trinidad ...	23,549	20,672	21,868	280	50,053	75
Dominica ...	19,677	21,110	22,954	2,051	47,496	72
St. Lucia ...	17,067	18,596	20,166	4,064	42,113	70
Grenada ...	19,723	15,222	16,747	4,760	40,703	72
St. Vincent ...	1,286	1,648	2,436	400	3,840	66
Totals ...	81,302	77,248	84,171	11,555	184,205	72%

St. Lucia Shipments—Canada Banana Company. I.—According to Districts, 1935.†

District.	Stems.	Counts.	Per cent.	Rejects.	Per cent.	Bananas in Cultivation No. trees 1935.‡
Castries ...	9,687	6,439½	66.5	891	9.2	17,000
Dennery ...	19,053	13,284	69.7	1,429	7.5	38,000
Micoud ...	20,052	14,730½	73.4	1,644	8.2	85,000
Vieux-Fort ...	32	24½	78.1	2	6.25	5,000
Laborie ...	3,312	2,291¾	69.2	427	12.9	22,000
Choiseul ...	2,211	1,359¼	61.5	301	13.6	4,000
Soufrière ...	7,235	5,312¾	73.4	572	7.9	26,000
Canaries ...	4,842	3,097¼	64.0	712	14.7	22,000
Anse-la-Raye ...	1,851	1,233¾	66.7	372	20.1	10,000
Gros Islet ...	2,452	1,543	62.7	172	7.0	10,000
	70,727	49,316	68.5	6,522	10.7	239,000 = 830 acres

* "A Guide to the Cultivation of Bananas"—Department of Agriculture, St. Lucia, 1934.
† Statistics supplied by the St. Lucia Banana Association.
‡ Estimate—Department of Agriculture.

St. Lucia Shipments—Canada Banana Company. II.—1935.

——	9's	8's	7's	6's	Total.	Counts.
Jan.—June ...	4,174	5,156	5,308	724	15,362	10,876
July ...	1,610	1,544	1,630	248	5,032	3,645
August ...	2,865	2,480	2,456	608	8,409	6,105
September October	5,421	5,536	6,182	1,508	18,647	13,041
November ...	1,339	1,644	1,898	572	5,453	3,664
December ...	1,658	2,236	2,692	404	6,990	4,782
Totals ...	17,067	18,596	20,166	4,064	59,893	42,113

Comments.

The general quality of fruit was regarded as good, particularly during the first few months. The later shipments during the wet season suffered from bruising, and a fair proportion of scarred fruit was evident. More recent reports described the fruit as much improved, a large percentage of excellent quality, providing the best standard of fruit yet shipped.

Disease Conditions.

The work on Panama Disease of bananas is reported in Section II—*Plant Diseases.*

II. THE FRESH FRUIT TRADE.

Citrus.

Excluding the area in limes already noted under "Principal Industries" the area in citrus amounts to approximately 400 acres (Grapefruit—300 acres. Oranges—100 acres), and a marked revival in orange planting has been evident during the past season, with the prospect of supplying the Canadian and Bermuda markets.

The Advisory Department (Imperial College of Tropical Agriculture) have suggested that the manurial requirements of grapefruit should now be investigated, with a view to establishing a definite plan of fertiliser applications in relation to soils and the late-bearing of fruit, which thus appears to evade serious infestation by Citrus mite.

The beneficial effects of adequate lime applications to citrus soils as investigated by the Chemical Department of the College have been noted, and elsewhere the deleterious effects of common salt in citrus soils have been reported. The use of sea weed manure applied to citrus is thus regarded as dangerous.

The complete Citrus Fertiliser* has again been utilised and supplies have been made available to growers at cost price. An increment in the potash proportion, with a corresponding decrease in the nitrogen and phosphates ratio is, however, considered a more suitable mixture for local use.

Organisation of the Citrus Trade. Following the recommendations of the St. Lucia Conference 1930, and the Jamaica Conference 1933, on the Fruit and Vegetable trade, a further meeting of unofficial and official representatives forming the British West Indies Fruit and Vegetable Council (Eastern Group), was held in April, 1935, in St. Lucia. The report of this first meeting of the Council was published in August of the same year.

One aspect of the Fruit trade, that of the development of the grapefruit industry, was considered by the Council to warrant very much greater confidence from the St. Lucia and Dominica growers, in view of the satisfactory market for this fruit under Preferential Tariff. It was explained that the absence of shipping facilities largely retarded any such development locally.

The Council has since investigated the possibilities of transhipment and alternative shipping lines, but at present the local facilities are confined to monthly calls of the Harrison Line and the Booker Line for the United Kingdom, and fortnightly calls by the Canadian National Steamships. Adequate cold storage space for the United Kingdom is available only at definite advance bookings and the present crop is thus too small to attract importance. Consequently most of the season's crop (1935) was sold locally to ships of the fleet in port at $\frac{1}{2}d.$—$\frac{3}{4}d.$ per fruit.

There is however, ample scope for an extension of the citrus trade to Canada, and frequent and adequate cold storage accommodation is available for this market. The following figures shew that a much larger market exists than is generally realised, and provided that quality fruit only is shipped, the Eastern Group should be able to compete on favourable terms with citrus fruit from the United States and other more distant sources of supply, having regard to Tariff conditions and seasons of crop.

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*6% Ammonia
9¾% Potash (K_2O)
14% Phosphoric Acid (Water soluble P_2O_5)

Imports of Citrus (Oranges and Grapefruit) into Canada during 1935.

Country.	Grapefruit cases.	Country.	Oranges cases
U.S.A. ...	3,937,464	U.S.A. ...	2,042,653
Honduras ...	402,800	Japan ...	110,482
Jamaica ...	128,012	Jamaica ...	94,000
British Honduras ...	101,781	Spain ...	57,315
Trinidad & Tobago ...	44,517	Palestine ...	43,191
Other B.W.I. ...	43,616	Honduras ...	7,899
Cuba ...	23,249	United Kingdom ...	6,178
Hong Kong ...	3,709	British S. Africa ...	5,000
Palestine ...	1,550	Other B.W.I. ...	4,193
Miscellaneous ...	222	Brazil ...	3,311
		Italy ...	3,105
		Trinidad & Tobago ...	3,068
		British Honduras ...	1,482
		Miscellaneous ...	3,164
Total Empire ...	323,185 — 6.9%	Total Empire ...	159,021 — 6.7%
Total Foreign ...	4,363,735 — 93.1%	Total Foreign ...	2,226,320 — 93.3%
Total ...	4,686,920		2,385,341

A trial shipment of the larger grapefruit crop in prospect for 1936 is now having attention. The quality of fruit now being produced is very satisfactory and planting of "Marsh Seedless" only is being generally promoted.

Mangoes.

There was some improvement in the value of the mango export trade, and experimental shipments of 'Julie' mangoes in cold storage were made to London. These gave a satisfactory return of ¾*d.* per fruit net at the Government Marketing Depot. The further details of these trials are reported under the work of the Government Marketing Depot. (Appendix I).

The Fresh Fruit trade generally maintained a steady position and exports excluding limes and bananas mentioned above, amounted to an appreciably greater value than for the previous year.

The total value of exports compared below for the five-year period thus exceeds £9,000 for 1935, and elevates this minor industry to an important position in the agricultural life of the Colony, employing as it does a large porportion of small growers and peasantry.

		1931.		1932.		1933.	
		Amount.	Value £	Amount.	Value £	Amount.	Value £
Grapefruit	crates ...	102	36	108	28	43	13
Oranges	,, ...	367	169	598	206	503	141
Mangoes	,, ...	9,823	2,172	7,754	1,655	7,490	1,212
Avocado Pears	,, ...	2,924	567	4,768	977	3,144	610
Pineapples	,, ...	67	23	206	96	106	31
Miscellaneous	...	...	1,492	...	1,463	...	2,003
Bananas	...	...	274	...	185	...	1,626
Total	...	13,283	4,733	13,434	4,625	11,271	5,636

		1934.						
		Amount.						Value £
		To Canada.	To Bermuda.	To U.K.	To U.S.A.	To other places.	Total.	
Grapefruit	crates ...	13	19	...	...	...	32	13
Oranges	,, ...	1	160	1	2	210	374	92
Mangoes	,, ...	288	3,535	298	...	3,760	7,881	1,372
Avocado Pears	,, ...	4	2,241	...	...	...	2,245	389
Pineapples	,, ...	...	36	...	...	...	36	16
Miscellaneous	...	...	...	...	...	...	...	1,917
Bananas	...	...	...	...	...	...	...	1,499
Total	...	306	5,991	299	2	3,970	10,568	5,298

		1935.						
		Amount.						Value £
		To Canada.	To Bermuda.	To U.K.	To U.S.A.	To other places.	Total.	
Grapefruit	crates ...	71	45	1	...	5	122	35
Oranges	,, ...	12	118	...	...	161	291	91
Mangoes	,, ...	334	3,372	465	...	2,385	6,556	1,567
Avocado Pears	,, ...	2	3,850	1	2	2	3,857	709
Pineapples	,, ...	...	13	...	...	...	13	3
Miscellaneous	...	...	...	...	...	...	...	1,752
Bananas	...	...	...	...	...	...	...	5,209
Total	...	419	7,398	467	2	2,553	10,839	9,366

III. FOREST PRODUCTS AND FOREST CONSERVATION.

There was a marked decrease in the total value of exported forest products for 1935: £4,385, as against £5,370 for 1934. This was mainly on account of a decreased exportation of charcoal, and it appears that the market for this fuel in Barbados and Martinique has not been so attractive as formerly. In view of the rather extensive production of charcoal, for which coastal land has been depleted of its useful shelter growth, this is a welcome respite to a small industry.

The coupes of bush growth for fuel and charcoal have been seriously overcut and fuel forests cannot remain economic and self-supporting unless regeneration is allowed to proceed over a longer period of time, up to 25 years, instead of an approximate 5 years as at present. The existing method is to cut and ship fuel when ready cash is required, or for making temporary pasture for cattle, instead of subdividing a specified area into a rotation of coupes, of which one only should be cut each year.

Exports of Forest Produce, 1931—1935.

	Boards cu. ft.		Cedar cu. ft.		Firewood cu. ft.		Hardwood cu. ft.		Logwood tons		Furniture	Brooms doz.		Charcoal bags	
	Amt.	£	Amt	£	Amt.	£	Amt.	£	Amt	£	£	Amt.	£	Amt.	£
1931	543	50	352	23	136,448	466	5,491	333	40	100	24	1,345	44	39,803	2,031
1932	975	70	28	1	108,160	338	2,493	227	—	—	691	1,381	53	79,960	4,042
1933	1,871	151	—	—	101,504	290	3,116	248	10	25	333	952	35	85,840	4,327
1934	2,008	158	103	8	79,104	196	4,008	242	67	98	147	1,052	35	89,840	4,486
1935	1,639	140	50	5	92,032	234	2,900	236	20	50	212	855	28	73,349	3,667
Average of 15 yrs.	939	75	162	19	169,191	846	1,420	105	576	1,694	147	156	467	43,993	2,434

Bay Oil and Bay Rum.

The distillation of eugenol and phenol oils from the leaves of the wild bay or allspice tree, *Eugenia* (*Pimenta*) *acris* was carried on to a less extent through lack of overseas trade demand for the bay oil and the proprietary article—bay rum. A toilet preparation has been introduced by the local Bay Rum Co. and compares favourably with similar imported preparations, which are, however, better advertised.

The trade in Pimento walking sticks has fallen off. This is a condition which will favour an improved growth of the young bay trees, which were formerly cut without regard to bay oil production.

The Possibilities of Logwood Products in Canada.

The production of logwood has decreased during the last ten years from several hundred tons per annum to a mere ten or twenty tons, on account of low prices. The felled log is bulky, and in relation to its value is an expensive product to ship under existing freight rates. No market for logs exists in

Canada, but the Trade Commissioner has advised that logwood paste and crystals would find a satisfactory market, and quotations were noted for the prevailing U.S. product which supplies this market. The preparation of paste crystals by steeping logs in *leaches* and evaporating the liquor, is a simple procedure which could be conducted where sufficient logs are available in the vicinity, e.g. the Gros Islet district, where the natural-seeded logwood area has markedly increased, but is in danger of being cut for fuel.

The Timber Trade.

The production of local boards and scantling appears to have increased although no figures are available. The imports of prepared timber have correspondingly decreased as given below for the period 1935. There is no serious extension of a local timber industry and the mixed nature of the forest does not warrant commercial exploitation.

The production of fruit crates for exporting produce has continued to a lesser extent at one estate in Soufrière, using local soft woods such as "Bois Blanc" (*Simaruba sp.*). Standard Canadian fruit crates are, however, imported at a slightly lower price than the local product, and the manufacture of lime barrels locally has also not yet been found competitive with the imported article.

Imported Forest Products.

	Pitch Pine sq. ft.		*Spruce & White Pine sq. ft.*		*Shooks, Staves & Casks.*
	Amount.	£	Amount	£	£
1935 ...	46,613 ...	610	32,593 ...	442 ...	1,740
Average of 15 years ...	60,614 ...	795	54,154 ...	786 ...	

Investigation of Forestry Conditions.

As anticipated in the Annual Report for 1934, the visit of a Colonial Forestry Officer, Mr. A. Wimbush, Chief Conservator of Forests, Madras, took place under the provision of a grant for the British West Indies made by the Colonial Development Fund Committee. Mr. Wimbush was given every facility for visiting the forest areas and interviewing those interested in forestry matters during his stay of fifteen days commencing January 25th, 1936. A summary of conditions including all available reports and statistics was prepared for his investigations. A joint meeting of Members of Legislative Council and the Board of Agriculture was held, at which Mr. Wimbush stressed the importance of preserving the present forest areas, and regulating the charcoal and fuel trade to better effect. The cessation of shifting cultivation and the demarkation of a protected Forest Reservation was strongly recommended.

IV. THE LIVESTOCK INDUSTRY.

The exports of livestock and products formed only a small trade during the year as given below: —

	£
Animals	350
Hides & Skins	145
Shells & Turtles	67

The importation of animals and dairy products was £7,346 as compared below with the previous year :—

		1934	1935
		£	£
Animals	...	82	111
Poultry	...	70	22
Butter	...	783	2,497
,, substitutes	...	1,378	1,971
Cheese	...	401	542
Milk	...	125	107
Meat—processed	...	1,660	1,684
—fresh	...	334	412
		£4,833	£7,346

Not much progress has been shewn in the suggestion made by Dr. H. V. Metivier, O.B.E., B.Sc., M.R.C.V.S., Government Veterinary Surgeon, Trinidad, in his previous report on livestock conditions*, where he recommended the establishment of a modern dairy farm for the supply of milk and butter to the public. Private interests are confined to producing milk and meat supplies on a small scale only as a minor source of revenue.

Improved culling and building up of the herds has however been much in evidence, and the use of the Government Farm animals for breeding services has become established practice. The number of services made during the year by the Station animals was as follows :—Bulls 45, Boars 15 ; and tours were conducted in principal districts. Fourteen Berkshire pigs were bred and sold from the Station.

The provision of funds for one British Alpine-Buckling, and two Ewes in lamb for raising Black-head Persian sheep, was approved, and arrangements were made by the end of the year for their introduction.

The provision of a Sussex Bull was postponed in view of the need for a good Jack for mule and donkey breeding, and this animal, imported from Grenada, has been in constant demand during the new year.

The visit of the Veterinary Surgeon was made on June 5th—8th and his report has been published under " Problems of Livestock. No. 2 " 1935. The general improvement in conditions under which animals are kept suggests that the recommendations on dietary and breeding are being put into effect.

The " Problem " pamphlets mentioned above have proved very popular.

No census of animals kept in the Colony has been taken and the following figures are approximate estimates only :—

			1934	1935
Horses	..	...	700	650
Cattle	...	...	8,000	8,000
Sheep	...	...	6,300	6,300
Pigs	...	...	8,000	8,000

Diseases.

No serious incursion of animal diseases occurred during the year, with the exception possibly of certain losses of sheep from helminthological effects on the Windward coast. The condition arises from a complex of alternate wet and dry seasons with a shortage of nutritious grazing, inducing severe infestation by stomach worms. Persistent treatment every 28 days by Copper Sulphate dosing, combined with fresh grazing, and folding in sanitary pens, and the removal of weaklings, is a practical method of controlling this trouble.

As noted under " Animal Quarantine " regulations, a stiffer attitude has been adopted against miscellaneous importations from the countries affected by Rabies, Foot-and-mouth-disease, Anthrax, etc., and so far no occurrence of these serious diseases has been observed.

*" Problems of Livestock ". No. 1. Agricultural Superintendent, St. Lucia.

COMPARATIVE SCHEDULE OF AGRICULTURAL PRODUCTS

		1931.			1932.		
		Quantities.	Value. £	£	Quantities.	Value. £	£
SUGAR PRODUCTS:							
Sugar, Vacuum Pan	tons ...	3,973	35,554		4,990	46,466	
Molasses & Syrup	galls. ...	24,837	1,194	36,748	32,988	1,453	47,919
LIME PRODUCTS:							
Concentrated Lime Juice	galls. ...	10,312	650		7,280	78	
Raw Lime Juice	,, ...	6,961	297		4,069	152	
Distilled Lime Oil	lb. ...	10,310	14,524		10,345	11,662	
Essential H.P. Otto of Limes	lb. ...	3,059	5,236		1,989	3,337	
Green Limes	brls. ...	4,114	5,418	26,125	3,782	5,552	20,781
COCONUT PRODUCTS:							
Coconuts	No. ...	367,350	1,178		650,240	2,430	
Copra	tons ...	498	5,869	7,047	432	5,389	7,819
CACAO PRODUCTS:							
Cacao	cwt. ...	10,419	14,125	14,125	8,188	9,091	9,091
BANANAS	bchs. ...	5,364	274	274	3,149	183	183
FOREST PRODUCTS:							
Boards (native)	c. ft. ...	543	50		1,009	73	
Cedar	,, ...	353	23		34	1	
Firewood	cords ...	1,066	466		845	338	
Logwood	tons ...	40	100		...		
Hardwood	c. ft. ...	368	31		2,430	222	
Brooms	doz. ...	1,345	44		1,384	4,053	
Charcoal	bags. ...	39,803	2,031		79,960	4,042	
Furniture (Household)	...	...	...		...	685	
Miscellaneous	...	...	267	3,012	...	1	5,415
FRESH FRUIT & PRODUCTS:							
Mangoes	crates ...	...	2,172		...	1,655	
Oranges	,, ...	150	169		580	206	
Grapefruit	,, ...	...	36		...	43	
Pineapples	,, ...	...	23		...	96	
Avocado Pears	,, ...	...	567		...	977	
Mixed Fruit	...	...	1,492		...	1,463	
Preserved Fruits	...	...	...		...	...	
Jams, Jellies, etc.	...	...	66		...	133	
Miscellaneous	...	...	...	4,525	...	...	4,573
SPICES:							
Nutmegs	lb. ...	6,486	99		5,872	79	
Mace	,, ...	1,131	54		1,064	48	
Kola Nuts	,, ...	9,907	77		17,389	110	
Miscellaneous	,, ...	1,389	16	246	2,623	29	266
LIVE STOCK & PRODUCTS:							
Hides & Skins	No. ...	1,895	265		1,668	126	
Shells & Turtles	lb. ...	...	...		401	114	
Fish Oil	galls. ...	88	6		...		
Horses	No. ...	9	53		21	85	
Asses	,, ...	18	37		3	5	
Mules	,, ...	3	28	389	7	28	358
HONEY PRODUCTS:							
Honey	lb. ...	38,314	208		46,393	331	
Beeswax	,, ...	643	20	328	392	12	343
BAY PRODUCTS:							
Bay Oil	galls. ...	221	500		44	100	
Bay Rum	,, ...	5,579	1,043	1,543	1,428	276	376
VEGETABLE PRODUCTS:							
Plantains	bchs. ...	184	16		203	16	
Farine	lb. ...	21,371	115		14,642	99	
Yams	,, ...	...	52		...	36	
Miscellaneous	...	...	...	183	...	416	567
MISCELLANEOUS PRODUCTS:		...	1,061	1,061	194	194	194
Total Exports	...			95,606			97,885

AND BY-PRODUCTS EXPORTED FROM ST. LUCIA, 1931—1935.

1933.			1934.			1935.		
Quantities.	Value. £	£	Quantities.	Value. £	£	Quantities.	Value. £	£
4,940	46,493		4,730	39,396		6,080	48,377	
43,260	1,417	47,910	23,080	1,431	40,827	168,903	2,401	50,778
16,208	860		3,371	228		1,080	45	
591	40		10,525	471		29,613	854	
8,056	7,412		13,406	12,275		10,264	9,673	
2,582	3,021		1,251	1,868		1,504	2,517	
3,758	4,445	15,778	6,001	7,010	21,852	6,619	8,035	21,124
1,199,808	3,527		2,616,175	7,298		2,814,965	7,632	
542	5,167	8,694	302	2,592	9,890	215	1,871	9,503
6,056	6,778	6,778	6,349	6,032	6,032	627,809	6,042	6,042
22,258	1,626	1,626	18,377	1,499	1,499	60,439	5,209	5,209
1,871	151		2,008	158		1,639	3	
. .	...		103	8		50	3	
793	290		618	196		719	234	
10	25		67	98		20	50	
3,116	248		4,008	242		27,168	182	
952	35		1,052	35		855	28	
85,840	4,327		89,238	4,486		73,349	3,667	
.	333		...	147		27	218	
.	...	5,409	...	...	5,370	...	...	4,385
7,490	1,212		7,881	1,372		6,556	1,567	
503	141		374	92		291	91	
28	13		32	13		122	35	
106	31		36	16		...	3	
3,144	610		2,245	389		3,857	709	
...	2,003		...	1,917		5,496	1,699	
.	117		...	38		2,318	53	
.	43		...	47		...	...	
.	...	4,170	...	3	3,887	...	...	4,157
6,834	80		8,272	102		4,736	63	
1,326	58		1,062	51		1,032	44	
13,760	108		15,688	121		11,776	106	
2,347	22	268	35	2	276	...	62	275
2,240	122		1,391	97		2,879	145	
105	22		...	141		357	67	
.	...		...	...		...	...	
63	288		85	369		35	180	
5	11		22	6		...	.	
23	126	569	22	134	747	12	70	462
34,826	373		43,051	424		44,357	415	
206	5	378	168	10	434	...	13	428
20	32		2	8		9	4	
1,827	398	430	1,424	301	309	1,168	243	247
341	22		208	14		512	38	
12,530	61		22,202	113		13,128	66	
... .	25		...	7		...	4	
..	214	322	...	105	239	...	14	122
. .	275	275	...	317	317	...	500	500
		92,607			91,679			103,232

IMPORTED FOODS.

Under this head appears a large value of imported products derived from agricultural and farming operations, which to some extent should be displaced by home-grown products. As an instance of this, the total imported value of BUTTER and BUTTER SUBSTITUTES, amounted to £4,468, and edible oils and common soap amounted to £8,611. Of the former, perfectly good palatable dairy butter has been produced locally, but for lack of a comprehensive programme, including breed, dairy herds, and adequate working capital, this small enterprise could not sell table butter at the imported rate, and consequently died out. Yet it is certain that the diet of the poorer classes includes very little butter, cheese, or milk, and that children, in particular, suffer from an inadequate and unbalanced diet, which too often includes excess starchy foods and even rum! Similarly, the absence of nourishing foods such as eggs, from the local dietary, is due to ignorance of nutritive and energy values, and induces a desire for a more satisfying *bulk* in foods. In the Annual Report of the Child Welfare Association, 1933—34 and 1934—35, the number of cases received and treated in Castries only on account of improper feeding was 106 and 136 respectively. This takes no cognisance of numerous and habitual cases not reported to the Clinic, vide the Medical Report—1934.

In regard to EDIBLE OILS and SOAP, both of which may be produced from Coconut products, i.e. copra, the closing down of the local Oil and Soap Factory (1930) was an unfortunate setback in the progress of the Colony, as both articles form a common item in the domestic life of the labouring classes.

FISH AND MEAT.

The combined values of imported fish and meat amounted to £7,420. Of this, dried and salted fish was preponderatingly the greatest item. Yet, at the same time, the unorganised local fishing industry is unable to take advantage of heavy catches for curing and salting, and fishing villages are known to have sold off their equipment, boats and nets, for lack of markets and the means to cure and salt down the surplus of harvests.

COFFEE.

The importation of raw coffee, which in 1935 amounted to £1,128, is obviously a reproach to the planting community, and a campaign of planting has been directed to produce this crop in adequate qualities for local use, and for export to the Canadian market, which is now receiving large consignments of Trinidad coffee. Supplies of Robusta coffee seed have been imported for this replacement, and a large number of plants are becoming available.

RICE.

The importation of some 200 tons of foreign rice (£1,995) is also regrettable and in future should be avoided. The Vieux-Fort area has suffered from unemployment, yet owners of rice lands allow these to fall vacant, when a valuable home food-crop could be produced in the vicinity, sufficient to satisfy the entire needs of the Colony. In other districts also, this crop has not been properly developed and no seed has been saved for subsequent sowings. This, again, will have to be imported.

SECTION II. WORK OF THE DEPARTMENT OF AGRICULTURE.

1. Work in the Botanic Gardens.

There were no floods to interfere with the work in the Gardens during the year. Progress has been made in draining, and 700′ of concrete borders have been constructed on the main roads and walks. The Casuarinas established in the former wet lawns have thoroughly dried up this area, and more attention to the smaller area in grass lawn has been possible. More extensive nursery propagation of ornamental plants up to some 1,000 plants of good size has been necessary to meet the demand, and the upkeep of certain garden features in the town of Castries has been carried out on contract as a useful measure of providing employment.

A lock-up Standard Meteorological Screen has replaced the earlier screen and equipment which was destroyed by mischievous persons during the year.

Transported road-material has been built into the area cleared for use as a Children's Playground, a work that is not yet completed.

The Gardens generally have much improved during the past year or so, and are once more popular. Several fetes and shows were held here during the year.

Plant and Seed Introduction. Supplies of the following seeds and plants were imported for the use of the Department :—Cauliflower seed, Tonka beans, and cuttings of *Derris elliptica* and *D. Malaccensis* were provided through the Advisory Department of Agriculture, Imperial College of Tropical Agriculture. Seeds of several species of forest trees were presented by the Agricultural Society of Jamaica. The usual supplies of vegetable seeds were imported and retailed.

Fumigatorium Work. The number of consignments passed through the Fumigatorium or otherwise treated under the Plant Quarantine was 136. Of these, 22 consignments consisting of corn, grasses, coconuts, fruits and soil were prohibited and were destroyed.

2. The work of the Experiment Station, Union.

I. GENERAL OBSERVATIONS ON THE ECONOMIC CROPS.

Grapefruit.

Citrus Orchard Plots. The growth of the low-budded Marsh and Duncan trees imported from Florida in 1928 continues to be satisfactory, although not so vigorous as that of trees budded on stocks raised locally, particularly those budded at 18″. The trees have filled in considerably and have much improved in shape now that less budwood is being taken from them, and all carried a crop of 20—90 fruits each during the year, being reaped in January and February.

Selection Plots. The trees in this plot are all of the Marsh Seedless variety and are derived from budwood selected in 1933 from three original Florida trees having good-bearing characteristics on the Corinth, Union Vale, and Ruby Estates. All trees have made rapid growth during the year, due largely to the fact that it was possible to irrigate them with the new portable pump during the dry season. This has been found to produce a good flush of growth and blossom within a few weeks.

The orchard rows were cover-cropped with *Crotalaria sericea*, Horsebeans, (*Canavalia ensiformis*) and *Tephrosia candida*, and were interplanted with the Banana seedling I.C. 2, the Giant Cavendish, and the Gros Michel banana. Two bunches of the I.C. 2 were obtained during the year but the fingers were short and could not be described as attractive. It is proposed, however, to try this seedling under wetter conditions which are said to induce a better type of fruit.

Fertiliser Applications.

May.—1lb. sulphate of ammonia and 1lb. complete citrus fertiliser per tree.

December.—1lb. sulphate of ammonia, $\frac{1}{2}$lb. sulphate of potash and $\frac{3}{4}$lb. super phosphate.

In September 5lb. of air-slaked lime was applied to each tree.

The beds between the orchard rows were planted with Sour Orange Stocks for budding in 1936.

Oranges.

Citrus Orchard Plots. These trees are in a healthy condition and have made satisfactory growth during the year. The crop was not as good as that of 1934, as a prolonged dry spell at the time of flowering, with no irrigation, caused a considerable proportion of the flowers to drop.

Orchard Section. All the trees made satisfactory growth with the exception of that of the Ruby variety, the foliage of which became very yellow in the dry season because of root damage caused by the Citrus Weevil. This tree recovered to a remarkable degree, however, after the rainy season commenced and after a liberal application of fertiliser was made.

Russeting of the fruit caused by citrus mites has been bad on some trees but has not been general. Careful observations were made during the year over the period during which the damage takes place, and it appears that while mites may cause damage at any time of the year, their attacks seem to be most serious between the months of April and October and that the greatest amount of damage is done during the first four or five months of the growth of the fruit.

It was noticeable that the damage has been slight where spraying with 3 per cent. Sulphemulsol was practised at regular fortnightly intervals during the first few months of the development of the fruit.

Budded Limes.

Citrus Orchard Plots. There has been a considerable amount of die-back among the budded limes and in consequence they have made poor growth. This is attributed to the damage done by the Citrus Weevil (*Diaprepes sp.*).

The lime hybrid T1 continues to fruit regularly all the year round and it has been propagated on a small scale for estates trials.

Orchard Section. The Woglum and Tahiti limes continue to make satisfactory growth and they carried a satisfactory crop.

The roots of the West Indian Limes have been seriously affected by the Citrus Weevil and in consequence the trees have not made good growth.

The orchard trees in this section received 4-7lb. of citrus fertiliser, and mulch. Cover crops of *Crotalaria sericea*, *C. Usaramoensis*, and Horsebeans have been maintained. *Indigofera endecaphylla* has been introduced between some of the mango and orange trees, and this leguminous cover-crop has made excellent growth and has assisted materially in reducing weeding expenses. Budded orange and lime plants were distributed from the beds planted with Sour Orange stocks in 1934.

Spraying of orange and lime trees for Purple and Snow Scale insects was carried out at regular intervals with 3 per cent. Sulphemulsol.

Lemons.

Citrus Orchard Plots. All these trees have grown well and have borne satisfactory crops. This section was not cover-cropped during the year as a special effort was made to eradicate Johnson Grass, (*Andropogon halepensis*) which was rapidly becoming a menace. It is pleasing to record that this effort was successful and that this grass now seldom appears.

The trees in this plot were heavily mulched with lemon grass and *Gliricidia* trimmings and the following fertilisers were applied :–

In May, 3lb. citrus fertiliser to 5-6 year-old trees and 1½lb. citrus fertiliser to 2-4 year-old trees.

In December, 2lb. sulphate of ammonia, 1lb. sulphate of potash and 1lb. superphosphate to 5-6 year-old trees, and half this quantity to the younger trees.

Mangoes.

Orchard Section. These trees all continued to make good growth. A large number of flowers was produced but the crops of individual trees were irregular and somewhat disappointing. During October they were heavily pruned and each tree received 12-15lb. of slaked lime.

Avocados.

Orchard Section. Trees of the Morne, Pollock, St. Anne and Government House varieties carried satisfactory crops and have grown well.

The entire collection of Avocado pears has been reproduced on an upland site and it is hoped that they will thrive in this new situation.

The following pears were planted in the new site :—

1 Dickenson, 3 Pollock, 2 Fuerte, 2 Nimlioh, 2 Butler, 2 Trapp, 2 St. Anne, 2 Galvana, 1 Winslowson, 1 Simmons.

Coconuts.

The selected varieties of imported and local nuts are healthy and have responded well to green-dressing and mulching carried out during the beginning of the year. Eighteen trees of three varieties raised from Malay seed, the Dwarf red, green, and yellow which had been transferred and replanted from the former Station at Reunion in 1928, have flowered well and carried a crop which has been used for raising local plants. These appear to be true to type.

Twenty-one of the local varieties, large green, medium yellow, and claret nuts, flowered and fruited during the year.

Sugar Cane Variety Plot.

The Sugar cane varieties have all made good growth, and some of the older ratoons have been replanted in another portion of the plot. There was a good demand for cuttings and the following varieties were maintained in the plots during the year :

B.H. 10 (12)	B. 374	B. 726	B. 2935	M. 7	P.O.J. 2714
B. 67	B. 381	B. 472	B. 4507	M. 42	P.O.J. 2725
B. 156	B. 409	B. 891	B. 6388	Sc. 12/4	P.O.J. 2727
B. 208	B. 417	Ba. 11569	M. 3	C.O. 213	P.O.J. 2878

The obsolete varieties are being removed in the new year in order to make room for more recent introductions available from the Central Quarantine Station, Trinidad.

II. THE PLANT NURSERIES.

The Department is responsible for the official supply of plants and seeds for large and small estates, and maintains five nurseries in the various important planting areas of the Colony, as shewn below :

Union Station	...	General major and minor crops.
Rabot, Soufrière	...	Citrus and coffee crops.
Dennery	...	Citrus and coffee.
Barre-de-l'Isle	...	Bananas, coffee and cacao selections.
Mahaut	...	Bananas.

Two further nurseries are maintained for miscellaneous supplies, one in the Botanic Gardens for seedling economics, and work on ornamental plants; and the Quilesse Murray Road Nursery, for the raising of banana plants, citrus, and peasants' crops in anticipation of the road development in this area.

The following plants, cuttings and seeds have been distributed from these nurseries during the year, as compared below :—

PLANTS, SEEDS, AND CUTTINGS DISTRIBUTED BY THE AGRICULTURAL DEPARTMENT DURING THE FIVE-YEAR PERIOD, 1931—1935.

	1931.	1932.	1933.	1934.	1935.
Lime Seedlings	7,687	13,725	6,700	1,575	...
Budded & grafted limes	296	2,019	3,382	8,202	6,454
Sour orange seedlings	8,405	3,200	700	100	1,548
Budded oranges	512	596	1,621	2,407	1,651
Budded grapefruit	1,265	1,489	8,508	2,510	1,261
Budded lemons	392	67	361	53	50
Grafted mangoes	102	69	88	14	53
Grafted avocados	123	22	40	...	39
Pineapple plants	5,012	1,788	942	...	...
Coffee, Robusta	7,300	140	4,690	4,374	4,540
Coconut plants	...	6	6	...	...
Dwarf coconuts	4	12	76	42	112
Claret nuts	...	11	...	...	...
Mango stocks	...	...	256	10	...
Guava	...	...	4	...	...
Sapodilla	...	...	2	...	...
Papaw plants	...	...	12	...	...
Total Orchard Plants	31,098	23,144	27,388	24,433	15,792
Cane plants	39,594	5,949	13,324	22,308	11,545
Forest plants	1,878	132	108	161	306
Vegetable seedlings	15,378	3,200	4,615	2,725	...
Tanias	...	...	190	...	...
Dasheen	...	...	100	60	...
Sweet potato cuttings	5	6	14,202	35,200	...
Potato yams	...	3,352	4	5	...
Plantain suckers	...	141	95	...	18
Bananas	...	122	140	357	29,272
Total Economic Plants ...	87,953	33,046	60,166	85,249	56,933
Green dressing seed (lb.)	119	46	5	18	221
Fodder plants & grasses	55	...	646	...	17
Pasture grasses	...	...	470	663	400
Lemon grasses (stools)	...	...	600	300	101
Ornamental plants and cuttings ...	491	486	443	1,471	1,242
Hedge & fence sticks (bundles) ...	...	...	3	6	...

III. GOVERNMENT STOCK FARM.

The number and kind of breeding animals kept at the Farm on the Experiment Station is as follows, inclusive of new purchases made at the end of the year :—

1 pure-bred Holstein Bull.
1 ¾ bred Holstein-Zebu Bull.
1 Kentucky Jack Donkey.
3 pure-bred Sows, 2 Boars—Large Black Pigs.
1 pure bred Sow, 1 Boar—Berkshire Pigs.
1 British-Alpine Buck Goat.
2 Cross-bred Sheep with one half-bred Ram Lamb.

Tours of the breeding animals are arranged at published rates of service, with special concessions for small-holders and others, and services are also taken at the Station. Certain additional animals for draught-work and manure-making are also kept at the Station.

3. Research and Experimental Work.

I. MANURIAL TRIALS ON BUDDED LIMES.

These trials are being carried out on four acres of budded limes—No. 6—with a view to determining the fertiliser requirements of budded trees. The trees were planted in 1932 and spaced at 16′ by 25′ forming a Latin Square of sixteen plots comprising four replications, viz.

Plot.	*Applications per tree.*			
	1st yr.	*2nd yr.*	*3rd yr.*	*4th & Subsequent yrs.*
A. Sulphate of Ammonia + Mulch	½ lb. S/A.	1 lb. S/A.	3 lb. S/A.	4 lb. S/A.
B. Sulphate of Potash ,, ,,	½ lb. S/P.	1 lb. S/P.	3 lb. S/P.	4 lb. S/P.
C. Super-phosphate ,, ,,	2 lb. S.	4 lb. S.	5 lb. S	6 lb. S.
D. Control	Mulch—5 tons per acre per annum.			

The border trees in each plot are not included in the statistical analysis of fertiliser response, being used as "guard" trees to take up any effect of fertilisers which may extend from the "experiment" trees in adjacent plots.

The growth of the trees in this area has been irregular, varying from fair to good, and is attributed to root damage caused by larvae of the Citrus Weevil.

There was no heavy flowering during the year but three small crops of fruit were set between January and May.

There were two general and moderate flushes of growth in February and September and three small flushes were produced in January, May, and June.

The incidence of Withertip was general, but of slight intensity on young flushes produced during the rainy season. Purple and Snow scale insects were not so troublesome as in 1934 and they were controlled by spraying with 3 per cent. Sulphemulsol.

Lemon grass mulch was applied at the rate of 250lb green material (i.e. 100lb dry matter) per tree during the year.

Fertiliser Applications. 4lb sulphate of ammonia, 4lb sulphate of potash and 6lb superphosphate were applied in each tree in the respective plots in two equal parts in January and July.

Measurements of the experiment trees were taken in January and July and general observations were recorded during the year. Regular collections of yellow limes were made and the number and weight of fruit from each Experiment tree were recorded. The bulk of the crop ripened during August and September and amounted to 54 barrels.

	A :	B :	C :	D :
The ratio of crop to treatment was ...	5.20 :	10.71 :	4.11 :	5.21 :

the actual total barrelage not including "guard" trees being 25.23

and including "guard" trees i.e. total barrelage ... 60 brls. = 16.6 brls. per acre.

The cost of maintaining this experiment amounted to £37 4 4. (Labour etc. £35 0 8; fertilizers £2 3 8).

II. WITHERTIP DISEASE TRIALS OF BUDDED LIMES.

This Experiment covers two and a half acres of budded limes planted in 1933, in order to indicate what effect, if any, the presence or absence of shade and irrigation has on the incidence of Withertip disease on bottom land, and the resultant gain or loss of crop.

The necessary shade trees "Immortelle" and *Gliricidia* have been planted, and irrigation channels are installed in the plots as follows:—

Plot I. No shade, irrigation.
Plot II. No shade, no irrigation.
Plot III. Shade, no irrigation.
Plot IV. Shade, irrigation.

These plots have been cover-cropped with *Crotalaria sericea* and the trees have been heavily mulched with lemon grass.

In July each tree received 1lb citrus fertiliser and 1lb sulphate of ammonia. In December each tree received 1lb sulphate of ammonia and ½lb sulphate of potash and ¾lb superphosphate.

The trees have all grown well and a crop of 10½ barrels was made during the year. The expenditure on this experiment amounted to £17 15 6. (Labour £16 18 0; fertilisers £0 17 6).

III. DEMONSTRATION ORCHARDS.

The purpose of these orchards is to demonstrate the inexpensive development of one acre each of the recommended fruit trees, by intercropping with local food-crops such as are common on estates and small-holdings.

The cost of operations is tabulated and carried forward annually, and any receipts are recorded (see below). The catch-crops have now been removed to make room for the permanent trees.

The orchard trees were planted in 1931 in land redeveloped from abandoned cocoa, and cover some four acres of land exclusive of roads etc.

Plot I. Orange.

Varieties. Washington Navel, Parson Brown, Valencia Late and Temple hybrid.

The growth of these trees has been good and a small setting of fruit was made in March. There was a general flush of flowers early in June from which a good crop was set, some of the trees carrying up to 450 fruits.

The fruit was of good quality and regular spraying in the early stages with 3 per cent. Sulphemulsol successfully minimised the damage done by mites, and the fruit was the cleanest on record.

Intercropping with dwarf bananas was continued, and *Indigofera endecaphylla* was planted in the plot at the end of the year. Drains were kept open during the rainy season, and the trees were heavily mulched at the beginning of the dry season.

The following fertilisers were applied:—

2lb sulphate of ammonia and 1lb citrus fertiliser in June.
2 „ „ „ „ 1lb sulphate of potash, and ½lb superphosphate in December.

Slight attacks of Snow and Purple scale insects during the dry season were controlled by spraying with 3 per cent. sulphemulsol.

Plot II. Grapefruit.

Varieties. Marsh Seedless and Duncan.

The growth of the trees in this plot has been good and a satisfactory crop was set in June, one of the trees carrying 280 fruit. This crop was somewhat larger than that of 1934, and some of it ripened during the year. The bulk of the fruit will ripen in 1936. *Indigofera endecaphylla* has been readily established in this plot and is making excellent growth and exercising considerable control over weeds.

Application of Fertilisers. This was similar to that in the orange plot.

Plot III. Avocados.

Varieties. Nimlioh, St. Anne, Fuerte, Government Office seedling, Government House seedling, and Galvana Green.

This plot consists of local selections and of imported varieties of avocados, with a view to gaining a better knowledge of growth requirements and shipping characteristics.

No more trees in this plot succumbed to the unfavourable conditions described in the report for 1933, but while some of the trees made satisfactory growth, others made little progress. Several trees of the "Galvana" variety carried small crops of fruit. This variety is a local green fruit and a fixed seeded variety, and it appears to survive cold storage for two weeks without breakdown from chilling.

Bananas have been grown in this field, and a cover crop of lemon grass has been interplanted to assist in supplying mulch to the other plots of the demonstration orchard.

Each tree received 2lb. of citrus fertiliser in April, and 2lb. sulphate of ammonia and 1 lb sulphate of potash in December.

Plot IV. Mangoes.

Varieties. Grafted Julie, Budded Julie, Mon Repos late, Ressource late, and Peach.

Planted in 1931, these trees have grown rapidly and have had to be heavily pruned. Each tree received about 10lb. slaked lime in October and a mixture of 3lb. superphosphate and 2lb. sulphate of potash in December.

A local whirlwind destroyed two trees of the Peach variety and they have been resupplied.

The plot has been cover-cropped with horsebeans.

EXPENDITURE AND RECEIPTS ON THE DEMONSTRATION PLOTS, 1931—1935.

Plot 1, ORANGES. (72 trees—25 feet x 25 feet).

Expenditure.				Receipts.			
1935	£	*s.*	*d.*		£	*s.*	*d.*
Cultivation	8	5	0	1,106 Oranges	2	15	4
Fertilisers and insecticides ...	1	12	0	17 bunches Bananas ...		4	3
Intercrops		9	0				
	10	6	0		2	19	7
1934 Catch crops & Orchard trees ...	11	0	10		4	11	5
1933 ,, ,, ,, ...	14	8	8		14	1	0
1932 ,, ,, ,, ...	22	18	4		5	12	3
1931 ,, ,, ,, ...	12	3	10		1	17	1
Total Expenditure ...	70	17	8	Total Revenue ...	29	1	4
Per acre per annum ...	14	3	6				

Plot 2, GRAPEFRUIT. (72 trees—25 feet x 25 feet).

Expenditure.	£	s.	d.	Receipts.	£	s.	d.
1935							
Cultivation	7	19	2	5,107 Grapefruit	6	8	7
Fertilisers and insecticides ...	1	12	0	5 bunches Bananas ...		1	3
Intercrops		9	0				
	10	0	2		6	9	10
1934 Catch crops & Orchard trees ...	11	6	3			19	10
1933	20	6	2		4	13	4
1932 ,, ,, ,,	18	11	7		14	9	8
1931	23	17	7		10	5	8
Total Expenditure	84	1	9	Total Revenue ...	36	18	4
Per acre per annum	16	16	4				

Plot 3, AVOCADO PEARS. (48 trees—30 feet x 30 feet).

Expenditure.	£	s.	d.	Receipts.	£	s.	d.
1935							
Cultivation	5	6	11			...	
1934 Catch crops & Orchard trees ...	10	9	5		1	2	8
1933 ,, ,, ,, ...	17	5	8		2	13	0
1932 ,, ,, ...	16	1	10		9	6	9
1931 ,, ,, ...	14	13	9		3	10	0
Total Expenditure ...	63	17	7	Total Revenue ...	16	12	5
Per acre per annum ...	12	15	6				

Plot 4, MANGOES. (48 trees—30 feet x 30 feet).

Expenditure.	£	s.	d.	Receipts.	£	s.	d.
1935							
Cultivation	4	7	9	386 Mangoes	1	16	9
Fertiliser		7	9				
	4	15	6				
1934 Catch crops & Orchard trees ...	5	15	3		1	0	6
1933 ,, ,, ,, ...	6	10	5		3	8	10
1932 ,, ,, ,, ...	13	11	6		9	0	0
1931 ,, ,, ,, ...	10	18	1		1	16	4
Total Expenditure ...	41	10	9	Total Revenue ...	17	2	5
Per acre per annum ...	8	6	2				

Extension Plot.

This plot contains new or useful economic trees which are being introduced for general planting purposes. Fifteen additional trees were established during the year, and the growth of all trees has been satisfactory. The complete list of trees is given below :—

Grapefruit :	Marsh Pink and Foster's Pink.
Tangerine :	Dancy and King.
Orange :	Lue Gim Gong, Hamlin.
Avocado :	Trapp, Simmons and Butler.
Miscellaneous :	*Malpighia glabra* (Barbados Cherry).
	Artocarpus integrifolia (Jack Fruit).

IV. SUGAR CANE MANURIAL EXPERIMENTS.

(a) Manurial Trials, Roseau.

The Manurial Experiment plots started at Mont D'Or Estate, Roseau Valley, in 1932, and at Roseau Estate in 1931, were again reaped. The control (A) plots, as stated in the Report for 1934, received an application of 375lb. sulphate of ammonia and 200lb. sulphate of potash per acre.

At Mont D'Or Estate there are five treatments, each repeated four times ; and at Roseau Estate the similar five treatments are arranged in the form of a Latin Square. The purpose of the experiments is to determine the optimum application of sulphate of ammonia and sulphate of potash on these sugar-cane soils.

The Department is indebted to Dr. A. E. S. McIntosh, B.Sc., Ph.D., Geneticist, Department of Agriculture, Barbados, and Mr. P. E. Turner, M.Sc., F.I.C., Sugar Agronomist, Department of Agriculture, Trinidad, for their co-operation in this work during the year.

The following information was obtained from the 1935 reaping of these experiments :—

Table I.

Station.	Mont D'Or Estate, Roseau.
Age of Cane.	Second Ratoon.
Plot size.	1/23 acre weighed.
Soil.	Alluvial Clay Loam.
Variety.	B.H. 10 (12).
Treatments.	*A.* 375lb. Sulphate of Ammonia + 200lb. Sulphate of Potash per acre.
	B. 150lb. Sulphate of Ammonia per acre.
	C. 300 „ „ „ „ „ „
	D. 450 „ „ „ „ „ „
	E. 600 „ „ „ „ „ „
Plant Canes reaped :	March, 1933.
First Ratoons reaped :	March, 1934.
Manures applied :	May 10th, 1934.
Reaped as second Ratoons :	March 27th, 1935.

Summary of Results.

Treatments.	A	B	C	D	E	Mean.
	375lb. S/A. 200lb. S/P.	150lb. S/A.	300lb. S/A.	450lb. S/A.	600lb. S/A.	
Tons cane per acre	39.66	34.02	34.88	35.84	38.44	36.57
Per cent. of Mean	108.45	93.02	95.37	98.00	105.11	100.00

TABLE II.

Station. Roseau Estate.
Age of Cane. First Ratoon.
Plot area. 1/23 acre weighed.
Soil. Alluvial Clay Loam.
Variety. B.H. 10 (12).
Treatments. As at Mont D'Or in Table I.
Plant Canes Reaped: March, 1934.
Manures applied: Sulphate of Ammonia—April 12th, 1934, Sulphate of Potash—May 10th, 1935.

Summary of Results.

Treatments.	A	B	C	D	E	Mean.
	375lb. S/A. 200lb. S/P.	150lb. S/A.	300lb. S/A.	450lb. S/A.	600lb. S/A.	
Tons cane per acre	37.47	37.52	37.86	36.36	37.72	37.29
Per cent. of Mean	100.48	100.61	101.52	97.50	99.94	100.00

REMARKS.

No significance is shewn in these results, though it would appear that sulphate of ammonia at the rate of 300lb per acre is about the optimum application: this is approximately the average application used under estate conditions. There is some indication at Mont D'Or that the application of potash would result in an increase in yield, this is, however, the first time that any application has been made to the "A" plots, so that no reliable conclusion can be formed.

Further sugar-cane experiment plots have been laid down during the year at three estates and these will be reaped in 1937.

(b) MANURIAL CANE TRIALS AT ROSEAU.

These trials deal only with sulphate of potash and superphosphate. All the plots received the standard estate dressing of pen manure, sulphate of ammonia, ground limestone, etc.

The plots are arranged in three 4×4 Latin Squares and the treatments are as follows:—

A=Control
B=2 cwt. Sulphate of Potash per acre
C=1 cwt. Superphosphate
D=2 cwt. Sulphate of Potash and 1 cwt. Superphosphate per acre.

(c) Manurial Cane Trials at Dennery.

The following treatments are included in this trial:

A=Standard estate dressing.
B=1 cwt. Sulphate of Ammonia applied 1 month after planting.
2 „ „ „ „ 8-10 weeks after planting.
3 „ „ „ „ at the end of the following dry season (June=July).
C=Sulphate of Ammonia as in (A) with 2 cwt. Sulphate of Potash.
D=Sulphate of Ammonia „ „ (B) „ „ „ „ „

These plots are arranged in three 4×4 Latin Squares.

(d) Variety Cane Trials at Vieux-fort.

The three varieties B2935, S. C12/4 and B726 are being used in these trials to determine the suitability of these varieties for the calcareous drier type of soil in the plain of Vieux-Fort. The plots are arranged in four 3×3 Latin Squares.

V. ENTOMOLOGICAL INVESTIGATIONS.

(a) Sugar-cane Moth-borer. (Diatraea spp.)

This work is now in charge of the Entomologist, Mr. H. E. Box, F.E.S., attached to the Advisory Department of Agriculture, Imperial College of Tropical Agriculture, whose separate reports deal with this work.

(b) Citrus Weevil (Diaprepes spp.)

Preliminary observations on the Citrus Weevil (*Diaprepes spp.*) were undertaken during the year in conjunction with Mr. H. E. Box, F.E.S., Entomologist, Advisory Department, Imperial College of Tropical Agriculture.

The root damage caused by the larvae of the weevil has been found to be widespread throughout the Island, but at present, the damage has only attained serious dimensions in coastal valleys that are subject to drought during the dry season.

Adult beetles commenced to appear early in May after the first soaking rains. Between June and September egg-masses were collected from ten different districts in the Island and examinations were made to ascertain the percentage parasitism caused by the small Eulophid wasp (*Tetrastichus haitiensis*). Another egg parasite, *Ufens osborni*, was also found to exercise a certain amount of control in two districts.

The percentage parasitism was found to range from 2 to 85 per cent. in different districts, and a wide variation of parasitism was also found to exist in the weekly collections made in individual localities. It would appear that these egg-parasites do not exercise efficient control.

The numbers of egg-masses laid seemed to fluctuate during the above-mentioned period (i.e. June—September) reaching peaks in the first half of June and in the latter half of July.

Judging from the relative numbers of egg-masses obtained from limes, oranges, and grapefruit, it appears that the beetles prefer lime leaves for oviposition.

The damage done to the roots is characteristic, and affected trees assume an unhealthy yellow appearance as soon as the effects of the dry season are felt. This is frequently followed by severe attacks of Purple and Snow scale insects, the lime trees usually die back rapidly and show very little tendency to recover. On the other hand, oranges and grapefruit do not die back to the same extent, and when additions of fertiliser are made the trees usually recover to a considerable degree during the following rainy season.

The above inferences may have to be altered as more information is collected later on.

Mr. Box laid down paradichlorbenzene experiments at Marquis, Grand Anse, and Soufrière Estates, and similar experiments were carried out under his direction at La Pointe and Anse Mahaut Estates. About ¼lb. paradichlorbenzene was worked into the surface soil under the spread of each of six trees in different localities, and six similar trees, serving as controls, had the soil around them disturbed in a similar manner, but no paradichlorbenzene was applied.

(Early in 1936, following on the visit of Mr. R. G. Fennah, B.A., A.I.C.T.A., Entomologist on the staff of the Imperial College of Tropical Agriculture, Trinidad, a series of experiments, designed to give valuable information on the life history and oviposition habits of the insect, were laid down at Union. The Lime Experiment Plots were handed over for the field work in these investigations).

VI. PLANT PATHOLOGY. FUNGOUS DISEASES.

(*a*) *Panama Disease of Bananas.*

The work of banana plants inspection, and treatment of disease, has been continued by the inspection staff during the year with greater vigour, in all districts of the Colony. Three-quarters of a million plants have been inspected in new and old gardens, and 6,504 cases of Panama disease have been destroyed, an average proportion of below 1.0 per cent. (0.86 per cent.).

In certain very local cases, the percentage of disease is higher that this, particularly where infected land, flood areas or doubtful plants have been utilised; the greatest percentage in any one district, however, has not been higher than 2.4 per cent. (Soufrière and Canaries) and the lowest 0.2 per cent. in the Micoud and Gros Islet districts. The incidence of disease therefore compares favourably with that of previous years (1934=2.5 per cent.) as shewn below, and the inspection staff are to be congratulated on the unremitting efforts, pursued in all weathers and in difficult country, which have produced this satisfactory result. This work has permitted the banana crop to be extensively planted without the prospect of any serious loss and disappointment to growers. The liberal distribution of nursery plants raised under quarantine conditions at the various nurseries has contributed very largely to this result, and without such means of persuasion it would have been impossible to have kept the plantations free from new infections, which in turn would have entailed greater expenditure and further loss of useful areas.

The programme of inspection and treatment is very briefly described below for the benefit of planters, who should endeavour to duplicate these measures on a suitable scale on their own property, in view of the increasing demands on the official staff:

The Colony is divided roughly into the nine main districts which overlap to some extent in order to prevent the neglect of boundary cases.

Each district is under the direct charge of a senior Agricultural Officer, whose duty it is to organise the actual inspection work and nursery supply of plants, and whenever possible, also to select and to some extent lay-out the new plantations. Each officer draws on the available five inspectors, who are intelligent trained labourers and nurserymen, paid at the rate of 2/6 to 3/6 per diem, inclusive of all travelling expenses. Disease work is mainly entered upon in the latter part of each week, so that infected clothes, boots, etc. are not to any extent moved about in disease-free areas; the early part of the week being given over to checking of reports, and to other advisory work.

On proceeding to an infected area, an inspector provides himself with tools, gas-oil, etc., and takes on two or three responsible labourers of the district to assist in reconnaissance and the actual treatment of cases. Such gangs are encouraged to report disease cases and to discuss the value of treatment with the neighbouring small-holders whose co-operation is desired. By this means numerous cases are brought to the notice of the inspectors.

The usual gas-oil treatment having been carried out, the inspectors may urge the planter to apply for plants, or alternatively may arrange for inspection of the existing clean stock for subsequent sectioning and preparation for planting on a selected area. The usual advisory work of assisting with the lay-out of the new fields, instruction on the subsequent cultivation, pruning, and reaping, is also carried out. In the event of disease cases in any area being found to be above 2 per cent., special concerted measures are arranged through the senior officers, and if practicable, the area is isolated.

Under such conditions, the co-operation of the planting community has been very satisfactory, and no cases of neglect to treat disease under the Plants Protection Ordinance were taken up during the year. In the case of the existing banana-gardens in the Murray Road area now being developed, a quarantine measure of absolute prohibition of conveyance of any banana plants within a prescribed area was declared, and no difficulty has been met in enforcing this.

The Distribution of Panama Disease in the Colony—Survey 1935.

New Cultivations (under 3 years).

District.	No. of Gardens.			No. of Stools.		
	Inspected.	Diseased.	Per cent.	Inspected approx.	Diseased.	Per cent.
Castries ...	146	52	31·7	52,400	219	0·4
Dennery ...	283	86	30·4	77,110	578	0·7
Micoud ...	519	94	18·1	152,555	357	0·2
Laborie ...	339	77	22·7	73,620	265	0·3
Choiseul ...	39	7	17·9	2,765	46	1·6
Soufrière ...	796	225	28·1	133,620	1,227	0·9
Canaries ...	263	124	47·1	59,216	746	1·2
Anse-la-Raye ...	59	9	15·2	7,855	35	0·4
Gros Islet ...	10	3	30·0	3,190	12	0·3
	2,472	677	27·3	562,331	3,485	0·65

Old Cultivations (over 3 years.)

District.	No. of Gardens.			No. of Stools.		
	Inspected.	Diseased.	Per cent.	Inspected approx.	Diseased.	Per cent.
Castries ...	110	38	34·5	19,090	174	1·0
Dennery ...	181	112	61·8	29,275	560	1·2
Micoud ...	217	58	26·6	43,720	193	0·4
Laborie ...	163	76	41·4	18,780	245	1·3
Choiseul ...	60	25	41·6	5,150	116	2·2
Soufrière ...	297	202	68·0	32,124	793	2·4
Canaries ...	119	86	71·4	35,333	862	2·4
Anse-la-Raye ...	37	12	32·4	3,620	73	2·0
Gros Islet ...	12	1	8·3	1,415	3	0·2
	1,196	610	51·0	188,507	3,019	1·46

The total cost of the above service including stores, labour, travelling, and one-third emoluments of two Agricultural officers amounted to £288 during the year; Nursery work additional, £95—1935. A special vote was granted to provide for a part of this expenditure.

VII. AGRICULTURAL EDUCATION.

(a) Peasant Advisory Services.

Enough has been said in the foregoing sections of this report to shew that adequate attention has been given to the development of the peasants and smaller holdings. Sunday and weekly meetings and demonstrations were carried out in the various districts and a total mileage of 7,180 car miles was made by the two officers engaged mainly in this work.

(b) Agricultural Instruction in the Primary Schools.

The twenty-seventh annual examination of the Primary Schools in Agriculture was conducted by the Agricultural Instructor—Mr. R. W. Niles, from October 30th to November 27th, 1935. His report on the standing of the Schools is attached. In addition, the periodical visits, surprise and otherwise, were carried out by the various travelling officers.

The number of Schools examined was seventeen, as in the previous year, and these presented 545 pupils including 123 girls, for examination. The total number taught during the year, however, was 761. Thus only 71.6 per cent. of the Agricultural Class could be examined, a very unsatisfactory position, but still an improvement on the percentage—61.9—shown for the previous year.

Some discrimination will have to be made in future against those schools where casual absences not due to sickness, etc., are frequent, and such classes will lose marks in the Agricultural examination. In the present report the following schools show some *fifty per cent* absentees :—Choiseul, Anse-la-Raye, Forestiere, Babonneau and La Ressource.

The general results are not up to the earlier standards, and but very slightly better than the poor results of the previous year.

Theoretical knowledge was satisfactory, but the practical work at several schools was carried out with little regard to the growing of crops for demonstration purposes. Choiseul School in particular lost seriously in this connection, and Soufrière, Babonneau, and Canaries were all lower through neglect of outdoor activities.

The difficulties of adequate or suitable plots of land still exist in several schools, and Teachers are requested to co-operate in obtaining information as to suitable plots of land, so that the use of these may be obtained possibly by loan or as a gift.

In this regard, the Castries R.C. Boys' School had the good fortune to acquire a plot of land at a nominal rental. The Saltibus School has also acquired a piece of land. At present this is on rental basis and likely to affect the garden work by forcing the growing of crops merely to yield the necessary income.

The Castries Methodist School garden class is still badly in need of a suitable garden-spot.

Plant Propagation.

There was again a marked depreciation in the quality and numbers of plants successfully raised and distributed for the use of the classes, as given below : —

School.	Mangoes top-worked.	Mangoes grafted.	Oranges budded.	Grapefruit budded.	Pineapples.	Robusta Coffee.	Totals.	
Castries Anglican	...	2	...	...	...	...	2	Vegetable seedlings distributed.
Castries R.C. Boys'	...	3	...	...	...	...	3	
Castries Methodist	...	3	2	...	...	...	5	
Dennery R.C. Boys'	...	7	5	3	...	...	15	
La Ressource R.C.	14	15	20	...	...	...	49	
Micoud R.C.	...	...	...	...	...	...	...	Vegetable seedlings distributed.
Vieux-Fort R.C. Boys'	20	...	14	12	...	...	46	
Laborie R.C. Boys'	...	26	3	...	...	...	29	
Anse-la-Raye R.C.	9	3	23	3	14	...	52	
Mon Repos R.C.	4	2	4	8	10	...	28	
Forestiere Methodist	...	...	...	...	...	...	...	Vegetable seedlings distributed.
Choiseul R.C. Boys'	...	...	...	...	...	...	...	
Soufrière R.C. Boys'	...	...	...	...	...	...	...	
Riviere Dorée Anglican	...	...	2	...	...	...	2	
Canaries R.C.	...	...	...	...	...	...	...	
Saltibus R.C.	...	...	...	...	...	...	...	
Babonneau R.C.	2	...	...	...	21	12	35	
Total	49	61	73	26	45	12	266	

In regard to tools the position was serious during the year, but the aspect was completely changed in December when the Hon. Inspector of Schools reported that a grant of some £25 had been approved for the supply of tools. The purchase and distribution of these was accordingly made through the Agricultural Department, and no reason now exists for neglected gardens through lack of tools.

There still remains, however, the serious objection that most of the newly appointed Teachers and to some extent the older leaders of garden classes, have not come into close contact with the development of important or secondary crops through the absence of the annual lectures. Consequently most leaders suffer from lack of knowledge and apathy in garden work and cannot inspire the classes with any degree of enthusiasm.

In view of the fact that public interest is alert to the prospects of the projected Land Settlement Scheme, it is thus unfortunate that the younger generation are not receiving an adequate agricultural bias by way of elementary husbandry culled from exercises in the School-gardens, in order to equip themselves as future peasant proprietors. The report of the Commission on Secondary and Primary Education (1931-32) has this to say in reference to the local aspect : "If the economic future . . . . . depends on the development of peasant proprietorship and small holdings . . . . . it is in this sphere that school-gardens are likely to be of most value to the community." To regain and establish a love for the land in their classes, the teachers themselves must receive closer contact and a wider outlook, such as can be stimulated by the annual course of lectures, and the tours which can, with present conveniences, be arranged by the Agricultural Department. The small fund needed for such annual excursions would necessarily become a definite charge, so that well-considered arrangements could be made for the expenses of teachers' travelling, board, and lecture details, in the annual programme.

TEACHERS' EXAMINATION IN AGRICULTURE.

The following notes are extracted from the Examiner's Report on the examination of Teachers in Agriculture:

Probationers.	Fourteen candidates were examined. Of these, five only secured half-marks or over.
First Year Pupil Teachers.	Seven candidates were examined. Six of these received half-marks or over.
Second Year Pupil Teachers.	Five candidates were examined, two only received half-marks or more.
Third Year Pupil Teachers.	Three candidates were examined in this grade and secured half-marks or more, one barely satisfying the Examiner.

EXAMINER'S REPORT.

CHOISEUL R.C. BOYS'.

Many boys of the agricultural class were absent on examination day. The theoretical knowledge of the class was good, but the arrangement of the practical work for demonstration purposes was very poor, and there was no attempt at budding or grafting during the period under review, chives, cassava and sweet potatoes being the principal crops grown. This should be remedied by growing beds of sour-orange stocks so as to propagate budded citrus, and mango and avocado seedlings for budding, or larger trees be selected for top-working. The Choiseul garden suffers from drought, therefore green-dressings should be freely used and heavy mulching should be applied when the rainy season is over.

SOUFRIERE R.C. BOYS'.

The theoretical knowledge of the garden class was good, but the practical work and cropping of the garden included little that could interest the pupils. Tous-les-mois, a starch-yielding canna, seems to have been the principal crop grown, and there was no provision for budding or grafting demonstrations. The present plot, however, is unsuitable as a garden, and measures should be taken to secure a piece of land near the Recreation Ground where a proper garden could be started.

ANSE-LA-RAYE R.C.

The theoretical work was satisfactory and attention was given to top-working of mangoes and propagating budded citrus for distribution. The drains in the garden should be deepened in order to free the beds from flood water. The orchard should also be enlarged and should receive more attention. Crops of various vegetables were raised in the small garden in the Presbytery yard, and these beds should receive liberal dressings of pen-manure or compost.

CANARIES R.C.

The theoretical work was good, but the garden has been over-run by ducks and these have destroyed practically everything except sour-orange seedlings. I recommend that the garden should be fenced. The sour-orange stocks in beds are in good condition and should afford useful class practice in budding. Mango seedlings should also be grown, and top-working should be practised.

MICOUD R.C.

The theoretical work was very satisfactory and the improvement mentioned last year in the general handling of the garden has been maintained. The beds have been manured, raised, and cropped with cabbages, egg-plants, tomatoes, beans, and other vegetables. Beds of sour-orange and mango-seedlings should be grown for teaching budding and grafting. The soil is very sandy and consequently pen-manuring and heavy mulching must not be neglected.

MON REPOS R.C.

The theoretical work showed improvement, and the practical work and condition of the garden were both satisfactory. The *Gros Michel* bananas are now 2 years old, are free from Panama disease, and are giving good results. The cropping of the garden on the whole is good and attention has been paid to budding and grafting. The soil is heavy, therefore liberal applications of compost soil should be applied regularly, and green-dressings more freely used.

DENNERY R.C. BOYS'.

The theoretical work was good and improvement has been shown in the practical work and general condition of the garden. Preparations for budding citrus and grafting other plants were in progress and should receive careful attention to regain the standard of work shown two or three years ago. Onions and beans should be cultivated more extensively.

LA RESSOURCE R.C.

The theoretical knowledge was satisfactory and a good deal of practical work has been done. Budding and grafting have received proper attention and the boys are quite adept in performing these operations. The garden soil is heavy, and deeper draining is necessary. The beds require larger applications of pen-manure, and green-dressing and heavy mulching should also be practised to prevent the soil becoming packed. The wind breaks should receive constant attention.

Forestiere Methodist.

The theoretical knowledge was satisfactory, but the full extent of practical work could not be done owing to frequent heavy rains. The *Gliricidia* wind-break planted some time ago has died out and should be replaced by a line of "Pois Doux" which seems more suitable for this locality. A few beds of rough-lemon seedlings should be grown as stocks for budded citrus, as these appear to do better than sour-oranges in this garden. Garlic, onions, cabbages, and other vegetable were the principal crops grown. The pupils were quite conversant with the cultivation of these crops, which provide useful employment for them after they have left school. Seedlings of *Coffea robusta* should be grown for distribution to pupils and vanilla cultivation should be included in the practical work.

Babonneau R.C.

The theoretical knowledge was fair. The garden has been removed to a new site and not much practical work has therefore been done. The drains should not be less than 18" deep to be effective and larger quantities of humus should be incorporated in the soil of this garden. Pen-manure is scarce, but there is an abundance of dry grass on the spot for making manure and heavy mulching. The budded citrus supplied by the Department should be lifted and put out in well prepared holes on raised beds at suitable distances apart, and the weakest top-worked mangoes should now be cut out to leave room for the others to develop. A strong wind-break is very necessary.

Castries Anglican.

The theoretical work was very good and the practical work was satisfactory, but more grafting and budding should be attempted. The *Gros Michel* bananas were giving good results but the pruning was defective. Although the beds were well laid out, they are too flat, and should be exposed by deepening the drains before recropping.

Castries Methodist.

The theoretical work was very satisfactory. Although the garden is too small for the class, a good attempt was made with the practical work, which included the grafting of mangoes and raising crops of various vegetables in boxes, such as cabbages, eschalots, onions and lettuce; and yams, eddoes, and bananas, in the garden plot. Until a suitable piece of land is found, box-gardening should continue to form an important part of the work here.

Castries R.C. Boys'.

The theoretical work was very good, and quite a good attempt was made at box-gardening during the earlier part of the year. The small garden, however, is being replaced by a larger piece of land at Marchand Road, and more extensive work will be expected from the large class of boys. This piece of land has been green-dressed with horse-beans and should be cleared gradually as the beds are required for crops. The soil being somewhat heavy should first be properly drained and double-forked, before mulching.

Vieux-Fort R.C. Boys'.

The theoretical knowledge was good. The soil of this garden is retentive, and the application of lime and sand is necessary, followed by the incorporation of a good deal of humus. Green-dressings and litter mulches should be freely used to prevent sun-baking. Good crops of vegetables are being grown. The practical work should include more budding of citrus and top-working of mango seedlings, and these could be distributed to the pupils of the agricultural class, especially as good fruit is scarce in this district.

Laborie R.C. Boys'

The theoretical work at this school was satisfactory, and the garden was well looked after. In spite of unfavourable weather, good crops of onions, cabbages, tomatoes, and other vegetables have been raised. Pen-manure would help a good deal in such work, and if this is difficult to obtain, composts and heavy mulches should be substituted. The budding of citrus and top-working young mango plants should receive more attention, and the plants raised should be distributed to the agricultural class which consists chiefly of country boys.

Saltibus R.C.

The theoretical knowledge has shown improvement. The Head Teacher has rented a piece of land near the school and started a garden. This is now being laid out and should be useful in providing demonstrations for the class work.

Riviere Doree Anglican.

The theoretical knowledge was fair. The old school garden has been restarted and the practical work has shown improvement. The old sour-orange stocks should be dug out and burnt, and new plants be put in; beans, and onion cultivation should be included in the practical work and an orchard should be started at the eastern end of this garden.

List of Marks and Standing of Schools in Agricultural Teaching.

Schools.	No. absent on Examination Day.	No. of Pupils Examined.	Condition and use made of Garden.	Practical work and Knowledge.	Theoretical Knowledge.	Total.	Percentage.	Result Note.
Possible Marks	—	—	10	10	10	30	100	—
Castries R.C. Boys'	35	117	8	9	10	27	90	E.
Castries Anglican (a)	5	61	8	9	10	27	90	E.
Castries Methodist	13	23	9	8	10	27	90	E.
Dennery R.C. Boys'	8	43	9	9	8	26	86·6	V.G.
La Ressource R.C (b)	17	11	9	9	8	26	86·6	V.G.
Micoud R.C. (c)	6	25	9	7	10	26	86·6	V.G.
Vieux-Fort R.C. Boys'	6	20	8	8	10	26	86·6	V.G.
Laborie R.C. Boys'	11	26	8	7	9	24	80	V.G.
Anse-la-Raye R.C. (d)	12	14	7	8	8	23	76·6	V.G.
Mon Repos R.C. (e)	11	27	8	8	7	23	76·6	V.G.
Forestiere Methodist (f) ...	6	8	8	7	8	23	76·6	V.G.
Riviere Dorée Anglican (g) ...	6	12	7	6	8	21	70	G.
Choiseul R.C. Boys'	17	15	7	5	8	20	66·6	G.
Soufrière R.C. Boys'	23	68	5	5	9	19	63·3	G.
Canaries R.C. (h)	16	34	5	5	9	19	63·3	G.
Babonneau R.C. (i)	8	11	5	6	8	19	63·3	G.
Saltibus R.C. (j)	16	30	6	5	8	19	63·3	G.
	216	545	7·4	7·1	8·7	23·2	77·4	

(a) including 22 girls; (b) 5 girls; (c) 25 girls; (d) 3 girls; (e) 14 girls; (f) 3 girls; (g) 7 girls; (h) 19 girls; (i) 5 girls; (j) 20 girls;

R. W. NILES,
Examiner.

(c) Agricultural Cadets.

REPORT ON WORK OF THE AGRICULTURAL CADETS AT UNION EXPERIMENT STATION during 1935.

Theoretical Course: This followed the same lines as last year: the Assistant Agricultural Superintendent gave a course of lectures, and at intervals during the year test papers were set. All lecture notes were examined and corrected periodically.

Practical Course: The Cadets assisted in all the important operations carried out at the Station. Note books were kept and checked over regularly. When practicable, Cadets accompanied the Agricultural Officers on their field excursions and every effort was made to give them a practicable bias in the work in hand. In general, the Cadets showed a keen interest in their work.

One of the second-year Cadets was enabled to spend six weeks at Soufrière Estate, where the management gave him every opportunity to acquaint himself with agricultural practice under estate conditions.

EXAMINATION RESULTS.

Practical: The practical examination was carried out at Union during December by the Agricultural Superintendent. The standard of results was

high in the case of the second-year Cadets, and fair in the first-year candidates. The second-year Cadets also received marks for work on their plots during the year.

Theoretical: The Cadets sat for the examination on December 20th. All the candidates succeeded in satisfying the examiner, and, while the standard of results was not particularly high, it was still creditable, in view of the rather exacting requirements of the examiner.

The following marks were obtained in the various examinations:

SECOND-YEAR CADETS.

	Practical	*Plots*	*Theory & Oral*	*Totals.*
S. Edward ...	60	15	68	64%
A. Bonaparte ...	72	16	50	61%
A. Herman ...	56	18	64	60%

FIRST-YEAR CADETS.

	Practical	*Theory & Oral*	*Totals.*
R. Hinds ...	80	60	75%
E. John ...	55	40	47%
R. Jongué ...	40	45	42%

General: Several of the Cadets had difficulty in expressing themselves in the oral and descriptive tests, and the knowledge of English was not very good generally.

The second-year Cadets having qualified in the course of studies are able to apply for the grant of five acres of Crown Land, and will be furnished with the usual certificate of competency.

(d) The Norwood Boys Home, and Training Facilities for Boys and Young Men.

Mention should be made in passing, of the admirable though modest effort made by the Roman Catholic Presbytery in Castries at training boys in garden work and local handicrafts.

A number of boys, up to eight or ten, has been given rooms and land in a small estate near the Town, where they are employed in such work as can be found for them, and allowances of food and pay provided by donations from the funds of the Presbytery. The Department has been consulted, and assistance has been given to this deserving movement by way of planting material and casual employment as possible.

A more ambitious training scheme which would include the utilization of a large area of land at present unproductive and in the charge of the War Department, and the vacant buildings attached thereto, has been proposed by the Agricultural Superintendent. If funds could be found for this development, a much overdue provision for juvenile training in agriculture and handicrafts, would be made.

It is considered that this would meet the demand for vocational training, and the pressing need for means of reforming the local unemployed youth, who for lack of direction and useful employment, frequently become subject to vicious tendencies, undergo prison sentences, and become a charge on the public funds. The scheme is receiving the consideration of Government.

(e) Museums.

Close touch has been maintained with the Museums Association of the United Kingdom, and the Secretary of the Empire Grants Committee, under the Carnegie Corporation Funds, has intimated that an application for a grant for establishing a Museum in the Carnegie Library, Castries, would be considered provided certain conditions could be met. The Agricultural Superintendent provided estimates of the requirements for a building and equipment, and the proposal was being considered during the year.

VIII. PUBLICATIONS AND CORRESPONDENCE.

The following publications were issued during the year :—

"A Guide to the Cultivation of Bananas" and "Problems of Livestock in St. Lucia=No. 1" by E. A. Walters, F.R.H.S., F.R.M.S.; and a second pamphlet on Livestock—No. 2, was being printed at the end of the year.

A contribution to the Journal of Tropical Agriculture, Imperial College of Tropical Agriculture—"Notes of the propagation of Citrus Plants at the Union Experiment Station, St. Lucia" was made by Mr. A. F. Nichols, A.I.C.T.A., D.I.C.T.A.

The following books have been added to the Reference Library—

"Diseases of the Banana and of the Manilla Hemp Plant" by C. W. Wardlaw, Ph.D., D.Sc., F.R.S.E.; "The Families of Flowering Plants, Volume II Monocotyledons" by J. Hutchinson, F.L.S.; "The Diseases and Curing of Cacao" by H. R. Briton-Jones, D. Sc., Ph.D.,; "The Katamorphism of Igneous Rocks under Humid Tropical Conditions" by The late Professor Sir John Burchmore Harrison, Kt., C.M.G., M.A., F.I.C., F.C.S., F.G.S., F.G.S.A., etc.; "Cattle in the Tropics" by R. C. Wood, M.A.

The following official and semi-official organizations held meetings at which officers of the Department attended during the year :—

Board of Agriculture	—Agricultural Superintendent, and Assistant Agricultural Superintendent.
Banana Association & Board of Management	—Agricultural Superintendent.
West Indian Lime Oils Association & St. Lucia Lime Producers Coy.	—Agricultural Superintendent, and Assistant Agricultural Superintendent.
Advisory Fruit Trade Committee.	—Agricultural Superintendent, and Chief Fruit Inspector.
Cold Storage Committee	—Agricultural Superintendent.
St. Lucia Agricultural & Commercial Society.	—Agricultural Superintendent, and Assistant Agricultural Superintendent.

The usual annual returns for the Blue Book; the International Institute of Agriculture, Rome; the Canadian Year Book and Gazette; Stock Exchange Intelligence; etc., were revised during the year.

One hundred and ninety-eight Minute Papers and one thousand two hundred and three letters were dealt with during the year.

SECTION III. FINANCIAL STATEMENT.

Expenditure.

Head XVII.

Personal Emoluments	£1,623	4	4
Travelling Allowance to Agricultural Superintendent ...	80	5	6
Travelling Allowance to Assistant Agricultural Superintendent ...	45	16	8
Travelling Allowance to Agricultural Instructor	75	0	0
Travelling Allowance to Agricultural Officer	78	0	0
Transport Allowance for visiting Officers, Imperial Department of Agriculture	7	4	2
Labour, Union and Castries Stations	399	17	5
Seeds, Plants and Manures	49	12	8
Transport and Animals	49	18	5
Miscellaneous Requisites { Special Warrants Nos. 2, 6, 8, for Banana work £175 }	194	3	6
Printing, including Publicity work and Purchase of Books ...	14	5	8
Minor Repairs to Buildings, Union and Castries	19	16	5
Freight and Transport of Plants	9	9	10
Contingencies	10	1	5
Demonstration Fruit and Vegetable Plot	48	0	0
Experimental Lime Plot at Union Station	69	19	7
Agricultural Cadets	155	16	5
	£2,930	12	0

Head XVIIa (Extraordinary)

Provision of Animals	67	19	11
Maintenance and Veterinary Miscellaneous	24	10	4
Visit of Veterinary Surgeon	29	13	7
	£122	3	10

Head XVIIb (Special)

Agricultural Society, Grant-in-aid	£20	0	0

Head XXII. Colonial Development Fund.

3. (a) Government Fruit and Vegetable Depot	207	8	8
(b) Peasants Development Service	32	17	3
4. Citrus Cultivation	488	9	4
	£728	15	3

Working Account: Utilised for the purpose of minor trading transactions for peasants supplies, shipments, and plant sales; this account returned a Credit of £26 7 2 for the year.

Revenue.

Head IV.	17.	Fees for Fruit Inspection	£80	11	2
	20.	Sales from Agricultural Stations	133	1	3
X.	1.	Instalments, sales of Lots	5	9	0
XXII.	4.	Sale of Citrus Plants	169	11	3
			£388	12	8

Work under Colonial Development Fund Grants—Agricultural Department.

1. Under the Colonial Development Fund Act 1929, a grant of £1,480 was made in 1930 for the supply of planting material to peasants, the top-working of common mangoes to produce choice fruit, and the purchase of farm animals for breeding. This work is completed.

2. Conjointly with this scheme a grant of £3,820 was provided for the erection of a Government Packing House with packing appliances and transport. This scheme is proceeding satisfactorily. A minor revision of the scheme has been permitted and this now provides for an Export Fruit Shed on the Wharf at a cost of £300. The total expenditure up to the end of 1935, for the joint scheme was £4,565 18 10.

3. A loan of £4,823 was further provided under the above Act for the installation and working of a Government Cold Storage and Ice-making Plant. This service is operating continuously and all ice is now contracted out at wholesale rates.

4. A grant of £2,000 for the establishment of Citrus Orchards was made in 1932. This service is proceeding satisfactorily. The gross expenditure to the end of 1935 was £2,177 17 1. The excess shewn herein was credited from the Sales of Citrus Plants and will be adjusted by transfer from the respective account.

5. A grant of £1,465 for the services of an Entomologist to conduct a campaign against the Moth-borer pest of Sugar-cane by the establishment of predatory parasites was made in 1934.

6. A grant of £9,219 and a loan of £9,219 at 3½ per cent. per annum for 15 years, were approved under the Act in August, 1935, for the joint development of the Murray Road bridle-path as a motorable road linking the windward and leeward coasts, and the establishment of a settlement for small-holders, in an approved area traversed by the road. Under the Grant a temporary appointment of a Director of Public Works for three years was to be financed by the Colony.

SECTION IV. SUMMARY OF LEGISLATION AFFECTING AGRICULTURAL INDUSTRIES AS AT 31st DECEMBER, 1935.

1. Plant Quarantine.

I. EXTERNAL—IMPORT PROHIBITIONS.

The introduction of all plant material is regulated under the Plants Protection Ordinance No. 14 of 1916 (Revised), and cognate subordinate legislation. Thus quarantine work involves the inspection of all seeds, plants, and miscellaneous planting material and containers introduced into the Colony during the year, and is carried on in conjunction with the Post Office and Customs authorities. The introduction of soil, fruit and vegetables is further regulated by legislation under the Customs Amendment Ordinance No. 2 of 1920.

The following schedule gives the position of legislation regulating the importation of material likely to be a means of introducing diseases or pests.

A. *Prohibited articles, including seeds, plants, soil and packages and articles connected therewith.*

Articles Prohibited.	Country of Origin.	Reasons for Prohibition.	Index of Legislation.
Plants and Seeds.	Ceylon.	General precautions.	Revised Rules, Chapter 7, Regulation 2.
Cacao plants or any parts thereof.	South America, South and East of Panama.	Witchbroom disease.	Revised Rules, Chapter 7, Regulation 2.
Banana plants or any parts thereof.	Trinidad, Tobago, Central and South America.	Panama disease, root disease and insect pests.	Revised Rules, Chapter 7, Regulation 2.
Banana plants or any parts thereof.	Jamaica.	Panama disease, root disease and insect pests.	Proclamation of 8.9.17.
Banana plants or any parts thereof.	Grenada.	Panama disease, root disease and insect pests.	Proclamation No. 6 of 1925.
Banana plants or any parts thereof.	Canary Islands and West Africa.	Panama disease, root disease and insect pests.	Proclamation No. 13 of 1925.
Coffee, guava, mango, sapodilla, star-apple, plants, fruits, etc.	Bahamas, Ceylon, Cuba, Jamaica, India, Philippines.	Citrus Black Fly.	Proclamation of 10.2.17
All soil, fruit and vegetables, except plantains, nuts, onions, Irish potatoes, canned, dried and processed fruit and vegetables.	Countries other than the British Isles, Canada and British West Indies *	Mediterranean Fruit Fly.	Customs Amendment Ordinance No. 2 of 1920. Notice No. 7 of 1930.

* A Certificate of Origin is necessary for the non-prohibited countries.

B. *Prohibited articles except under licence and specified provisions.*

Articles Prohibited.	Country of Origin.	Reasons for Prohibition.	Index of Legislation.
Sugar-cane, corn, sorghum, fodder, grasses and seeds of grasses. (Natural Order—Graminae).	Any place beyond the limits of the Colony.	Mosaic disease of cane.	Proclamation No. 6 of 1921.
Coconuts, Coconut plants, or any parts thereof.	From any place.	Red Ring disease, other diseases.	Proclamation No. 2 of 1924.
Cotton seed, seed cotton.	From any place.	Pink Bollworm, other pests or diseases.	Proclamation No. 3 of 1924.
Citrus plants, fruits, and any parts thereof.	From any place.	Citrus Canker, citrus black fly, and general precautions.	Proclamation No. 3 of 1927.

C. *Permitted articles, provided these have passed inspection by the Agricultural Department or are otherwise authorised to be imported.*

Articles Permitted.	Country of Origin.	Index of Legislation.
Garden seeds, (not including corn, grasses, etc.)	From any place.	Plants Protection Ordinance, No. 14 (1916 Rev.)
Plants, root-stocks, nuts, tubers, bulbs, cuttings, etc., free from soil, and not included under "A" and "B".	—	—

II. INTERNAL.—EXPORT PROHIBITIONS.

Prohibited Exports.	Destination.	Index of Legislation.
Specified Fresh Fruits, nuts and Vegetables e.g. limes, oranges, grapefruit, lemons, mangoes, avocados, papaws, pineapples, bananas, tangerines, mandarines, melons, tomatoes, carrots, string beans, egg-plants, cucumbers, okra, pumpkins, cabbages, peppers, etc., unless under the certificate of the Chief Fruit Inspector.	All countries, except the West Indies and Bermuda, and Limes to U.S.A.	Ordinance No. 13 of 1930, Amendment Ordinance No. 1 of 1933, No 17 of 1933 and No. 3 of 1934. Notice No. 4 of 1930, Order No. 5 of 1930, No. 3 of 1931. Rules No. 6 of 1933 and No. 6 of 1934.
Bananas—"Gros Michel" except through St. Lucia Banana Association, or rejected and non-required fruit; and except "Cess" paid 1*d.* per count bunch on above.	To any place.	Ordinance No. 1 of 1934. Amendment Ordinance No. 16 of 1934. Ordinance No. 11 of 1935.
Lime seeds, not in fruit or dried.	To any place.	Notice No. 6 of 1935 (Customs Ordinance No. 109, 1916 Rev.)
Agricultural Export products unless specified duty paid	To any place.	Ordinance No. 11 of 1926. Amendment Ordinance No. 20 of 1926 and No. 9 of 1929.
General planting material if notified as not conforming to overseas conditions.	To any place.	Customs Ordinance No. 109, 1916 Rev: Requires Export certificates to United Kingdom etc.

III. INTERNAL. CONTROL OF DISEASES AND PESTS WITHIN THE COLONY.

Notifiable Diseases and Pests.	Locality.	Index of Legislation.
Cuscuta spp. "Dodder"	Generally	Plants Protection Ordinance, No. 14, 1916 Rev. and Amendment Ordinance, No. 3 of 1931.
Loranthaceae spp. "Bird Vine", Mistletoe	,,	Proclamation No. 34 of 1919.
Coconut Budrot	,,	Proclamation No. 34 of 1919.
Panama disease, Marasmius disease, Banana Borer and Weevil	,,	Proclamation No. 4 of 1924, Rules No. 8 of 1924, No. 15 of 1924 and No. 15 of 1926.
Pink Boll-worm, Cotton Stainer, and Leafblister Mite	,,	Proclamation No. 4 of 1926.

2. Animal Quarantine.

I. EXTERNAL.—IMPORT PROHIBITIONS.

Prohibited Importations.	Country of Origin.	Reasons.	Index of Legislation.
Animals and birds, etc.; Manure, fodder and litter, unless provided with Veterinary Certificate and local inspection certificate.	All places	Prevention of Animal diseases.	Ordinance No. 3 of 1935 Notice No. 8 of 1930.
Bees or hives	,,	Prevention of Foul Brood disease.	Ordinance No. 18, 1916 Rev. Amendment Ordinance No. 13 of 1928.

II. INTERNAL.—CONTROL OF ANIMAL DISEASES WITHIN THE COLONY.

Notifiable Diseases.	Measures.	Index of Legislation.
Anthrax, Rinderpest, Contagious Pleuro-Pneumonia, Glanders, Epizootic Lymphangitis, Foot-and-Mouth disease, Sheep Pox, Bovine and Caprine Contagious Abortion, Tuberculosis, Swine Fever, Rabies, Mange, Sheep-scab, etc.	Destruction, disinfection, isolation, regulation of movement.	Ordinance No. 3 of 1935.

3. Miscellaneous Legislation affecting Agricultural Industries.

Measure.	Object.	Index of Legislation.
Board of Agriculture	Advisory authority on Agricultural matters.	Ordinance No. 9 of 1933. Amendment Ordinance No. 27 of 1933.
Crown Lands.	Land Settlement, Allotment & Sale, Water Reserves, Timber. (All allotments now require approval of Superintendent of Agriculture).	Ordinance No. 45 of 1916 Rev. Amendment Ordinance No. 17 of 1926.
Protection.		
i. Minor Products Protection.	Prevention of Praedial Larceny.	Ordinance No. 13 of 1916 Rev. Amendment Ordinance No. 15 of 1923 and Commercial Code, 1920.
ii. Timber Protection.	Regulation of Deforestation.	Ordinance No. 22 of 1918.
iii. Turtle & Fish.	Close Season.	Ordinance No. 19 of 1916 Rev.
iv. Wild Birds Protection.	Close Season; Licences to Export.	Ordinance No. 20 of 1916 Rev.
Labour conditions.	Regulation of Minimum Wages.	Ordinance No. 5 of 1935.

APPENDIX I.

REPORT ON THE WORK OF THE GOVERNMENT MARKETING DEPOT.

1. Inspection of Export Produce.

During the year a total of 15,248 packages of fruit (1934=11,872) and 59,894 bunches of bananas (1934=17,849) was inspected and passed for export under the Fruit Ordinance. Inspection fees amounted to £80 11 2 (1934= £48 16 4). Cordial relations were maintained with the exporters and the work proceeded more smoothly than formerly. The number of licensed Packing Houses is now six.

2. Depot Operations.

The Depot was used to a much greater degree than formerly and shewed an increased turnover. Limes and mangoes to Canada and Bermuda, limes to the U.S.A., avocados to Bermuda and mangoes to England, comprised the bulk of the fruit handled.

I. TRADE SHIPMENTS.

Shipments to Canada by the Depot from the end of April to early June on behalf of producers under a Working Account, gave an average net return as follows, after deducting packing charges, freight and selling commission :—

Green Limes.	*Package.*	*Net Return per package.*
218 crates	Lug 0.6 cu. ft., of 24 lb. net.	4/5=28/8½ per brl.

This average price compared favourably with prices ruling on the New York market at the time.

There has been considerable increase in the export of green limes to Canada during the year and prices were satisfactory until late in the season when the returns declined.

II. EXPERIMENTAL SHIPMENTS OF FRUIT FROM THE DEPOT.

Mangoes.

Three shipments of Julie mangoes were made to England during the months of June to August. The results of these shipments were satisfactory with the exception of a part of the first shipment, which was reported on as having arrived in a hard and immature condition. These shipments were supposed to be kept at 40—50 deg. F. during the voyage. A test of storage behaviour was therefore carried out by the Chief Fruit Inspector to determine whether the picking stage might be delayed to a more mature condition.

At the beginning of the season 200 Julie mangoes of about the same stage of maturity were divided into two portions. One portion was kept at 40—45 deg. F. for sixteen days and the other portion was kept at room temperature. The fruit at room temperature commenced to ripen in about four days and all were ripe in eight days. A few of the more immature fruit were not sweet when ripe and they shrivelled and spotted. The Cold Storage, fruit did not soften or spot in cold storage, but all of them were ripe or spotty (50 : 50) within three days after removal from the cold storage, the flavour and colour being inferior to normal ripe Julie mangoes. Hence it would appear that Julie mangoes which are sufficiently mature to ripen normally without cold storage, may yet not be sufficiently mature to ripen normally if they are kept at a temperature of 40—45 deg. F. for two weeks after they have been picked. As a result of this test slightly more mature fruit has been recommended.

Data.

Stage.	Treatment.	No. of Fruit.	Condition 4 days.	Condition 8 days.	Condition 16 days.	Remarks
Mature	Room Temperature 83°-85° F.	100	ripening	ripe	wasting overripe.	...
Less Mature	Room Temperature 83°—85° F.		shrinking	spotted & sour	breakdown.	...
Mature	Cold Storage 40°—45° F.	100	firm	firm	firm.	50 ripe and 50 spotted 3 days after removal from storage, flavour poor.

Julie mangoes are still packed in two layers in tomato lug crates as described in the 1934 report. There has been no complaint about the method of packing, hence it seems unnecessary to alter the type of crate to a single layer crate which would cost more per fruit.

Summary of Julie Mango shipments to England in 1935.

	1st Shipment. 26*th June* 79 *crates.*	*2nd Shipment* 26*th July* 68 *crates.*	*3rd Shipment* 22*nd August* 135 *crates.*
	£ s. d.	£ s. d.	£ s. d.
Freight	5 14 8	4 14 0	9 6 2
Packing, handling, cable &c.	5 7 4	4 11 0	7 17 6
G.M.D. commission ($2\frac{1}{2}$%)	5 0	10 0	16 3
C.i.f. expenses (exclusive of cost of fruit.)	11 7 0	9 15 0	17 19 11
C.i.f. expenses (exclusive of cost of fruit.) per crate	2 $10\frac{1}{2}$	2 $10\frac{1}{2}$	2 8
Selling & handling costs London per crate.	1 0	1 3	1 2
Total cost per crate	3 $10\frac{1}{2}$	4 $1\frac{1}{2}$	3 10
Net per crate at Packing Shed (loss ... $0\frac{1}{4}$)	3 0		2 1

Approximately 9,500 fruit shipped.

Note.—It costs approximateiy 4*s*. to dispose of 1 crate (20 lb. tomato lug, containing about 35 fruit) in London. Hence the gross selling price per crate in London must be not less than 5*s*. 6*d*. to give a net return of $\frac{1}{2}d$ per fruit to the grower at the Packing Shed.

Avocado Pears.

During the year fruit from twenty-four different trees were kept in cold storage at 40—45 deg. F. The results obtained were similar to those described by Dr. C. W. Wardlaw in his "Preliminary observations on the storage of Avocado Pears" in Trinidad. Fruit from three trees did not shew chilling effects after two weeks storage at this temperature and these fruit were chilled only when they had been stored for three weeks.

Shipments of avocado pears to Bermuda have exceeded those of 1934. This fruit arrived in better condition than ever before, and this can mainly be attributed to the better cold storage arrangements on the Canadian National Steamships.

Stock Account.

This revolving account is operated in order to purchase packing materials co-operatively for exporters; the maximum authorised expenditure is £350.

The Balance Sheet for the year ending 31st December, 1935, is entered below, and shews a gross profit of £110 7 11 (1934=£84 3 2) credited to General Revenue. It was therefore again possible to pass on economies gained by bulk co-operative purchases in the United Kingdom and Canada, by marking down the retail rates of goods to fruit-packers, and the scale of charges has been generally reduced.

The Stock Account does not include charges for depreciation, reserve, or official supervision, as these items are provided for under the Depot Grant (Colonial Development Fund). Such items will, however, become a charge on income as the Grant is extinguished in 1936.

Dr. Particulars.	Amount. £ s. d.	*Cr.* Particulars.	Amount. £ s. d.
Balance debit to a/c at 1.1.35	177 17 7	Cash Sales	594 1 1
Purchases & Labour ...	432 7 1	Outstanding a/cs ...	16 17 3
Import Duty	29 9 7	Stock on hand at 31.12.35 ..	139 5 3
Surplus Stock	1 5		
Balance Credit	110 7 11		
	£750 3 7		£750 3 7

APPENDIX II.

GOVERNMENT COLD STORAGE PLANT.

Increased use was made of the Cold Storage for the *precooling* of exports (Receipts—1935 = £12 17 7: 1934 = £5 18 10), and also for local cold storage, the year's working providing a revenue of £283 19 10, an increase of £102 16 4 over that of 1934. The Ice Factory manufactured 91 tons 12 cwt. of ice, and sold ice to the value of £213 9 11.

Statement of the Working of the Government Ice and Cold Storage Plant for 1935.

Dr. Particulars.	£ s. d.	*Cr.* Particulars.	£ s. d.
Salaries	166 0 0	Ice Sales	200 19 4
Labour	72 3 10	Cold Storage Dues ...	232 0 8
Mechanic	24 10 0	Precooling	12 17 7
Stores	101 14 1	Battery Charging ...	8 4 3
Fuel	164 0 9		
Total Expenditure ...	£528 8 8	Total Receipts ...	£454 1 10
		Outstandings	
		Ice Sales... ...	12 10 7
		Cold Storage Dues ...	30 17 4
		Stock	
		Ice	4 0 0
		Unused Fuel ...	2 12 2
By Balance	30 13 3	Unused Stores approx.	55 0 0
	£559 1 11		£559 1 11

The installation of hire cubicles and domestic pockets for rental, and the contracting out of all ice made, are measures in progress to reduce the former deficits on this Plant. The amount of fruit precooled does not at present provide any substantial revenue.

APPENDIX III.

REPORT ON REUNION ESTATE, LAND SETTLEMENT AND CHOISEUL VILLAGE EXTENSION.

This Estate has been almost completely sold off, the number of lots remaining unsold being 2 out of 46, 44 having completed payments, making a total sum of £1,039 0 11 received from this Settlement. As no particular advantages were offered in this Settlement Scheme (1913) the selling-off of lots has been a lengthy process entailing rather frequent defaulting and confiscation of lots for resale. This method of settlement is obsolete under conditions now obtaining.

In the Village Extension, eight lots (two unenumerated) were sold, and eleven lots remain unsold, a revenue of £5 9 0 being collected during the year.

APPENDIX IV.

The Murray Road and Land Settlement Scheme. Colonial Development Fund 1935—1936.

Object. To meet the demand for land, and remove the tendency to "squatting", by settling a number of suitable small-holders and families up to 100—200 in a forest area of 2,000 acres, to be traversed by a motorable road through the hills between the coastal towns of Micoud and Soufrière.

The principal crops will be Bananas, Citrus, Coffee and a wide variety of general provisions.

Advantages.

1. Selected agricultural land, in self-contained plots—house spot, woodland, pasture and crop land, surveyed and laid out under inclusive charges and freehold.
2. Deferred payment of one year to allow crop production, thereafter by eight annual instalments making a total purchase price of £2 10 0 per acre.
3. Motorable road, secondary roads and feeder roads to holdings.
4. Provision of selected planting material at low rates; advisory assistance in layout, production and marketing.

Financial provision. A grant of £9,219 and a loan of £9,219 @ 3½ per cent. per annum, repayable in 15 years by equated annuities from the 6th year; divided as follows:

(a) Road Development...	£16,338	
(b) Land Settlement ...	3,200	(£2,100 Grant plus £1,100 from Revenue.)
Total Schemes ...	£19,538	

Management.

Roads. Under the direction of a Colonial Engineer on a three-year contract.

Settlements. Under the Land Settlement Committee constituted as follows:

Mr. E. A. Walters, Agricultural Superintendent, (*Chairman.*)
Mr. A. E. Augustin,
Mr. J. C. du Boulay,
Mr. A. du Boulay,
Mr. J. L. Royer,
Mr. F. H. Johnson,
Mr. G. B. Gregory, Assistant Agricultural Superintendent, (*Secretary*)

The selection of lots and reserved areas recommended by the Commissioner of Agriculture was being prospected at the end of the year and reports on representative soil samples were being arranged for by co-operation with the Advisory Agricultural Department and the Chemistry Department, Imperial College of Tropical Agriculture.

STAFF CHANGES.

The services of Mr. E. L. Daniel, Foreman, Union Station, were dispensed with from 1st May, 1935.

Mr. G. A. Beaubrun, Chief Clerk and Accountant, acted as Revenue Officer and Keeper, Spirit Warehouse, to 31st January, 1935; and 2nd Clerk Government Office, from 1st February to 31st December, 1935.

Miss A. L. Inglis, Clerk to Agricultural Superintendent, acted as Accountant throughout the year.

Mr. C. E. Charles acted as Clerk to Agricultural Superintendent throughout the year.

Mr. G. S. St. Jour, Copyist, was appointed Clerk to the Senior Medical Officer from 8th October, 1935.

Mr. E. V. Lewis, Copyist, was appointed to act as Copyist, Registry, from 8th October, 1935.

Mr. A. V. Mondesir was appointed as Foreman, Union Agricultural Station, from 1st May, 1935.

Mr. C. R. Bascom was appointed Copyist, Agricultural Department, from 8th October, 1935.

Mr. A. F. Romeo was appointed Copyist, Government Marketing Depot and Cold Storage, from 16th December, 1935.

Mr. E. A. Walters was on vacation leave from 31st January to 6th February and from 11th to 30th September, 1935.

Mr. A. F. Nichols was on vacation leave from 16th February to 3rd March and from 2nd December to end of year.

Mr. R. W. Niles was on vacation leave from 29th May to 31st July, 1935.

Miss A. L. Inglis was on vacation leave from 21st June to 20th July, 1935.

Mr. G. S. St. Jour was on vacation leave from 26th August to 6th October, 1935.

OFFICIAL VISITORS TO THE STATIONS.

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APPENDIX V.—METEOROLOGICAL OBSERVATIONS.

STATION, CASTRIES, ST. LUCIA, B.W.I.

LONGITUDE=60° 59′ 49″ W. LATITUDE=14° 0′ 36″ N. HEIGHT ABOVE SEA LEVEL 10ft.

Month.	Air Temperature.				Absolute Max. and Min.				Relative Humidity (% Regnault's factor.)		
	7 a.m.	12 noon	5 p.m.	Mean	Max.	Date	Min.	Date.	7 a.m.	12 noon	5 p.m.
January ...	70·4	77·9	76·1	74·8	89	11th	64	27th	92	79	84
February ...	71·9	81·0	77·0	76·6	86	1st	65	7th	88	72	85
March ...	73·9	82·0	78·5	78·1	88	27th	64	21st	85	69	76
April ...	75·1	83·7	80·9	79·9	90	16th	67	18th	86	67	74
May ...	77·3	84·8	81·5	81·2	90	1st	70	1st	85	70	77
June ...	78·2	85·3	82·6	82·0	90	4th	65	28th	88	71	78
July ...	78·4	84·3	81·5	81·4	91	22nd	69	6th	90	78	77
August ...	75·8	83·0	81·0	79·9	89	11th	67	17th	93	74	78
September	75·8	82·8	80·5	79·7	89	7th	64	27th	92	73	78
October ...	74·4	82·8	78·5	78·6	89	3rd	62	15th	94	72	82
November	73·6	81·5	77·7	77·6	86	2nd	67	13th	95	75	83
December ...	72·5	80·4	77·2	76·7	86	1st	66	20th	91	71	80
Year ...	74·8	82·5	79·4	78·9	91	22nd July	62	15th Oct.	90	73	79

ht.=3′ 0″ *hr.*=1′ 0″. STATION CASTRIES.

Month.	Rainfall (inches)			Weather.		Wind. No. of Observations of (at 7 a.m., 12 noon, & 5 p.m.)								
	Total	Max.	Date	Days of Rain	Days of Gales.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm
January ...	7·35	1·90	4th	21	0	2	—	72	—	6	—	7	—	6
February	1·14	0·25	27th	14	0	3	—	69	1	2	—	5	—	4
March ...	2·31	0·41	19th	15	0	1	4	80	2	1	—	4	—	1
April ...	3·18	0·73	21st	10	0	1	3	72	7	4	1	2	—	—
May ...	7·81	1·95	22nd	23	0	3	2	59	17	4	5	—	—	3
June ...	5·44	0·67	2nd	19	0	1	—	57	17	11	1	1	—	2
July ...	13·00	1·94	5th	23	0	—	2	48	33	9	—	—	—	1
August ...	11·65	2·24	17th	25	0	—	6	56	22	2	1	2	—	4
September	6·93	0·95	23rd	24	0	—	1	59	22	3	2	1	—	2
October ...	9·31	2·00	31st	22	0	—	1	73	11	1	—	2	—	5
November	6·46	1·36	22nd	20	0	—	1	70	7	3	—	3	—	6
December	7·21	2·01	5th	16	0	1	2	69	12	1	4	2	—	2
Year ...	81·79	2·24	17th Aug.	232	0	12	22	784	151	47	14	29	—	36

ht.=Height of therm. above the ground in feet. hr.=Height of the rainguage above the ground in feet.

METEOROLOGICAL CONDITIONS.

Rainfall: The total recorded at the Botanic Gardens, Castries, for the year 1935, was 81.79″. This was 15.44″ above that of the previous year, which was the lowest on record, and 8.93″ below the average rainfall for 46 years (1890—1935) the average now being 90.74″ per annum. Maximum precipitation for Castries occurred on August 17th when a relatively low fall of 2.24″ was recorded, being the same maximum as for the previous year. The highest maximum precipitation for the Colony in general was 8.00″ recorded on January 11th. Otherwise the distribution of rain was more generally normal, than for the previous year.

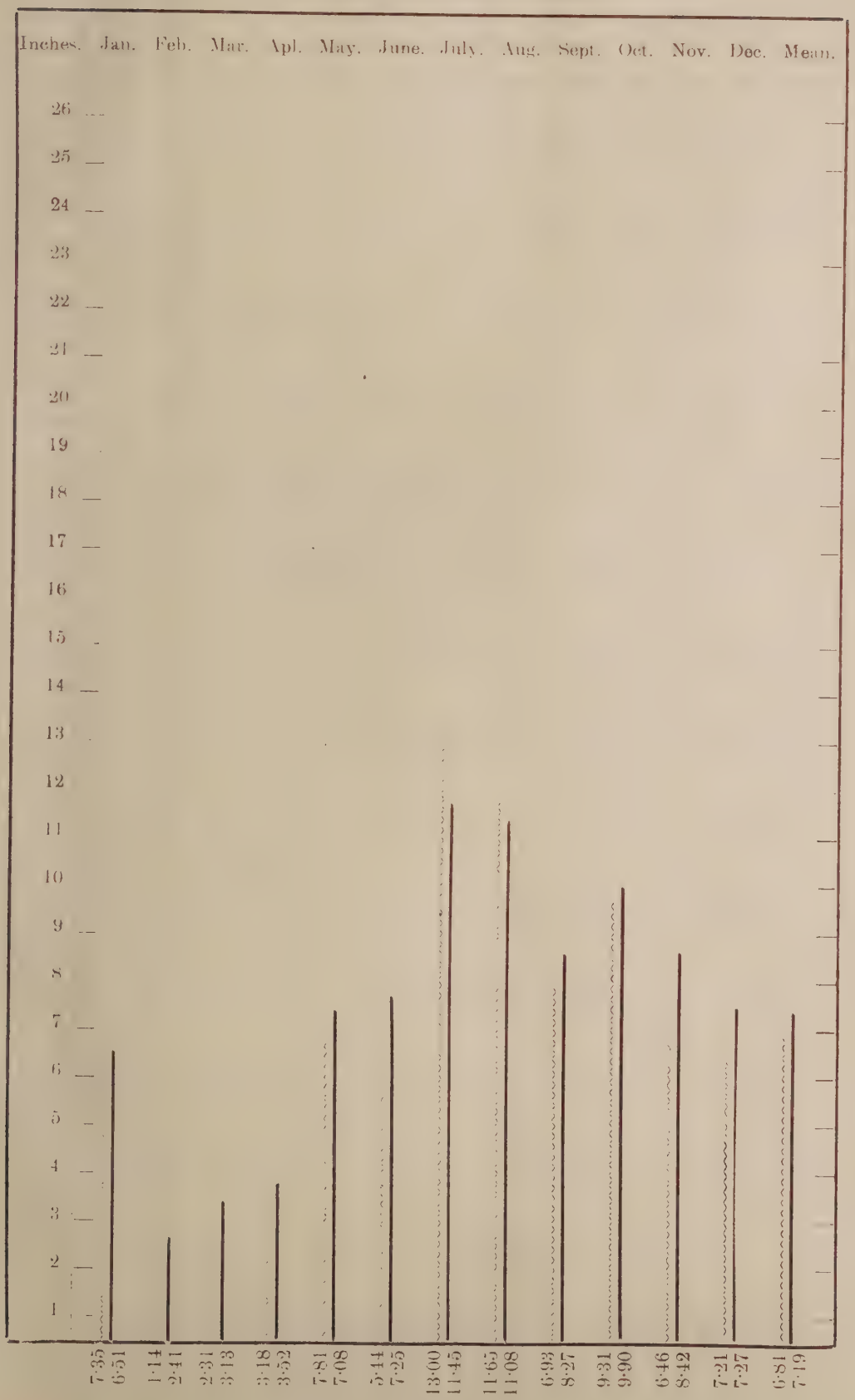
Weather: Generally fine weather was experienced during the year with freedom from severe thunder-storms. Some temporary flooding was experienced in the lowlying areas, particularly during the period 17th—22nd August co-incident with the formation and movement of a Northern Atlantic hurricane which devastated certain parts of the Continental areas. This was not otherwise of serious note in the Colony. The southern extremity of the Island still shewed effects of the drought of the previous year. Planting operations were more or less continuous.

Temperature: The mean noon shade temperature was 82.5° F., the maximum temperature was 91° F., and the minimum temperature was 62° F., an increased range of 29°. Temperatures were therefore lower than usual.

Stations: The number of rainfall stations recording during the year was 38.

APPENDIX VI.

GRAPH OF MONTHLY RAINFALL—46 YEARS (1890--1935)
CASTRIES, ST. LUCIA, B.W.I.



Legend.

——— Average for 46 years.

····· Rainfall during 1935.

APPENDIX VII.

RAINFALL RETURNS, 1935.

Observation Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Maximum in one day and date.		No. of days of rain.
	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.		
Gros Islet. Reduit Estate	5·27	2·06	1·51	2·57	4·96	2·20	10·74	8·94	7·14	6·67	7·32	5·68	65·06	2·83	Nov. 1st	195
Castries, Corinth ,, ...	7·49	2·32	2·21	2·81	6·02	3·85	11·60	13·17	7·87	14·40	7·90	7·44	87·08	2·55	Oct, 31st	146
Marquis Estate ...	9·39	1·74	1·51	2·53	9·40	3·93	11·28	...	9·29	13·91	14·21	7·18	84·37*	3·29	Nov. 10th	175
†Union Experiment Stn.	8·83	1·97	2·62	2·83	7·42	5·88	11·99	13·25	9·79	13·27	9·61	8·90	96 36	2·61	Aug. 17th	208
Choc Estate ...	6·58	2·03	1·66	1·99	5·78	4·89	9·62	9·83	7·09	10·90	8·48	5·88	74·73	2·00	Dec. 5th	188
†Botanic Gardens ...	7·35	1·14	2·31	3·18	7·81	5·44	13·00	11·65	6·93	9·31	6·46	7·21	81·79	2·24	Aug. 17th	232
The Barracks, Vigie ...	5·99	1·33	2·45	2·85	5·10	4·50	10·43	9·03	7·12	8·03	6·31	6·47	69·61	2·05	May 22nd	195
Soucis Est. Cul-de-Sac	8·74	1·58	0·87	2·66	9·74	6·58	14·34	14·76	11·34	13·82	14·74	7·42	106·59	2·73	July 5th	182
Mont D'Or Est. Roseau	8·75	2·49	2·75	3·60	7·39	3·65	12·15	12·36	10·39	10·76	14·97	7·12	96 38	3·72	Nov. 8th	236
Belair Estate, ,, ...	6·96	1·74	2·12	1·93	4·97	2·63	7·52	11·18	8·05	8·93	12·94	4·64	73·61	3·00	,, 8th	208
Vanard ,, ,, ...	9·10	2·46	2·14	3·24	7 83	3·30	11·34	12·63	10·41	12·41	15·40	7·07	97·33	3·00	,, 11th	154
Roseau ,, ,, ...	6·85	1·35	1·55	1·93	6·83	3·35	11·79	11·49	8·81	10·32	11·62	6·49	82·38	3·15	Oct. 31st	227
†Barre de l'Isle Nursery	...	...	...	...	...	...	...	14·10	12·83	17·64	12·60	9·66	66·83*	2·80	,, 30th	132
Ravine Poisson, Estate	13·05	2·60	2·90	4·30	9·85	3·95	13·63	11·73	11·37	16·07	11·08	7·65	108·18	4·30	Jan. 11th	142
Soufrière, La Perle Estate	7·21	2·66	3·19	4·04	10·19	5·48	14·60	15·81	11·31	7·53	8·02	5·66	95·70	3·75	,, 11th	201
Ruby Estate ...	...	...	...	...	...	...	...	...	12·38	...	8·49	...	20·87*	2·11	Nov. 10th	37
Fond Doux Estate ...	7·36	2·87	2·80	3·46	8·23	6·32	20·37	14·89	11·12	5·63	8·00	3·89	94·94	4·43	July 5th	207
Union Vale ,, ...	6·55	1·08	2·59	2·80	7·09	3·15	15·86	11·29	12·36	6·96	6·60	4·76	81·09	3·67	,, 5th	196
Beausejour ,, ...	7·44	3·65	4·18	4·92	11·76	5·42	19·35	15·32	14·22	7·49	12·76	6·36	112·87	3·47	,, 5th	293
Belle Plaine ,, ..	7·25	3·29	4·00	4·97	12·34	5·33	21·10	13·97	13·62	8·28	12·13	8·08	114·36	3·43	Jan. 11th	283
†Rabot Nursery ...	7·15	3·01	2·95	4·33	8·63	4·68	18·85	12·87	10·23	5·80	11·41	5·35	95·26	3·75	,, 11th	280
Moka Estate ...	...	...	...	...	...	...	21·62	14·17	15·36	9·60	15·71	...	76·46*	3·80	July 6th	92
†Quilesse Nursery ...	...	...	...	...	...	...	16·40	13·36	14·22	16·73	17·92	13·38	92·01*	3·05	,, 28th	119
Choiseul, Morne Lezard Est.	7·57	1·71	...	4·20	12·47	2·23	11·80	11·01	10·96	7·58	8·93	6·05	84·51*	4·35	Jan. 11th	190
Park Estate ...	8·97	2·49	2·19	4·42	15·11	5·33	15·82	13·47	13·31	7·26	12·95	7·71	109·03	4·49	,, 11th	222
Woodlands Estate ...	8·58	1·61	2·92	4·15	17·76	4·26	31·57	14·05	19·13	10·94	27·93	14·76	157·66	4·70	July 5th	250
Londonderry Estate ...	11·37	1·40	1·87	3·59	11·87	2 63	12·38	11·43	10·39	9·39	10·00	6·61	92·93	8·00	Jan. 11th	191
Laborie, Giraud Estate ...	9·62	2·03	1·44	3·63	14·24	4·13	18·04	14·20	13·40	7·29	14·05	8·62	110.69	5·10	July 5th	164
Black Bay Estate ...	4·97	1·58	1·27	2·24	12·57	1·98	9·57	10·05	9·43	9·00	8·07	2·38	73·11	2·82	,, 5th	139
Vieux-Fort, Retraite Est.	8·05	2·04	0·60	1·96	10·78	2·15	10·12	9·56	8·90	8·58	9·36	3·79	75·89	4·50	‡	118
Moule-à-Chique Estate	4·85	1·29	0·35	1·80	8·91	1·79	6·04	7·83	7·68	10·94	4·92	1·66	58·06	3·08	Oct. 8th	95
Pointe Sable ,, ...	4·30	1.45	1·05	1·32	11·45	2·03	3·59	6·56	7·22	9·85	7·62	2·63	59·07	4·30	Nov. 18th	115
Micoud, Troumassée Est.	7·10	2·25	0·50	1·10	8 80	2·20	7·60	7·10	14·25	9·00	6·25	3·70	69 85	6·00	Jan. 15th	86
Daubaignan ,, ...	9·94	2·79	1·08	2·03	...	...	...	...	...	...	...	...	15·84*	4·34	,, 12th	36
Dennery, Mamiku Estate	9·76	1·80	1·25	1·89	7·17	1·73	6·98	7·02	11·96	12·54	8·90	4·29	75·29	4·93	Oct. 16th	202
Errard ,, ..	...	...	...	...	...	...	12·09	11·66	12·63	17·86	13·64	6·08	73·96*	3·40	,, 16th	147
Prospect ,, ...	9·90	2·81	1·69	5·00	9·11	3·36	11·16	11·08	10·87	14·02	11.19	6·25	96·44	3·45	,, 16th	277
Border ,, ...	14·13	2 87	1·39	3·93	10·72	2·92	10·51	7·75	8·73	13·96	9·89	6·01	92·81	2·67	,, 31st	299

* Record not complete. † Departmental. ‡-11th Jan. & 19th Nov.

	Woodlands.	Londonderry.	Border.
Maxima—	157·66	8·00—Jan. 11th.	299

21st March, 1936.

E. A. WALTERS, *Agricultural Superintendent.*

APPENDIX VIII.

GRAPH of RAINFALL of the BOTANIC GARDENS, Castries during the period 1890—1935.

REVISED PRICES OF NURSERY PLANTS AND SUPPLIES.

1. The prices of plants do not include the cost of the box or package, for which a charge will be made if not returned to the Department. The cost of delivery is usually included in the prices. Exceptions to this rule will be made at the discretion of the Agricultural Superintendent.

2. All prices specified are for plants of standard quality. The prices of plants not included in this list will be fixed by the Agricultural Superintendent.

3. An addition of 100% is made on the price of all plants supplied for export from the Colony.

4. No plants are supplied on Public Holidays.

5. At least six months previous notice must be given when large numbers of such plants as bananas, coconuts, coffee, cacao, nutmegs, citrus, cane plants, &c., are required. All such orders should be in writing, and verbal or telephone messages should be confirmed in writing. In default of this rule such orders may not be attended to.

6. All orders will be supplied subject to the discretion of the Agricultural Superintendent and no responsibility is taken in regard to quality or quantity of plants after despatch from the Nurseries.

7. Complaints as to the quality or quantity of plants, &c., supplies, or as to the prices charged, should be made in writing to the Agricultural Superintendent at the time of delivery.

I. PLANTS.

	s.	*d.*	
Banana Plants (sections or suckers)		1	per plant (undelivered).
Oranges Budded		3	per plant.
Oranges Sour		6	per hundred.
Grapefruit Budded		3	per plant.
Lime Plants Budded/Grafted		3	per plant.
Mangoes Budded/Grafted		6	to 1*s.* per plant.
Coffee Plants	1	0	to 2*s.* per hundred.
Cacao Budded		2	per plant.
Nutmegs Grafted		6	per plant.
Avocado Pears		2	to 3*d.* per plant.
Avocado Grafted		2	to 3*d.* per plant.
Cane Plants	1	0	per hundred (undelivered).
Pineapple Plants		1	to 3*d.* per plant.
Eucalyptus	2	0	per hundred.
Casuarina	2	0	per hundred.
Palms (various)		3	per plant.
Ornamental Plants (various)		2	to 1*s.* per plant.
Seeds (various)		3	per packet.
Plants for windbreaks, hedges, &c., other than the above mentioned	2	0	per hundred.
Grass and Fodder Plants	1	0	to 2*s.* per hundred (undelivered).
Cover Crops and Green Manures		2	per lb.

II. FUNGICIDES, INSECTICIDES, and SUNDRIES.

Prices subject to change without notice.

		s.	*d.*
Sulphemulsol, fungicide and insecticide	per gal.	1	4
Carbon bi-sulphide	per gal.	2	4
Paris Green	per lb.	1	4
Copper Sulphate	per lb.	0	8
Soil Insecticide	per lb.	0	5
Whale-oil Soap (concentrated)	per lb.	0	11
Gas-oil—Panama disease killer	per gal.	0	10
Cattle Tick Wash (concentrated)	per gal.	5	3
Sheep and Dog Tick Wash (concentrated) ...	per gal.	3	5
Tobacco Insecticide (XLALL concentrated) ...	per pint	3	0
Ostico grease banding	per lb.	1	3
Raffia	per lb.	1	4

III. FERTILISERS and MANURES.

Prices subject to change without notice. Quotations based on market prices.

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